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REPORT TO CONGRESS

THE IMPACT OF STATE HOSPITAL PAYMENT RATESETTING SYSTEMS

OTIS R. BOWEN, M.D.
SECRETARY

DEPARTMENT OF HEALTH AND HUMAN SERVICES

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Excutive Summary

When Medicare was enacted in 1965 by amendments to the Social Security Act (Public Law 89-97), Congress selected as the method of reimbursement to hospitals a cost-based system divided into two components. Hospital Insurance (Part A) provided for payments of inpatient services furnished by hospitals and other institutional providers of services on a "reasonable cost" basis. Supplementary Medical Insurance (Part B) provided for reasonable cost reimbursement of outpatient institutional services and payment of services furnished by physicians and other suppliers on a "reasonable charge" basis.

Under the original Act, provider reimbursement of reasonable cost included all necessary and proper expenses incurred in the delivery of patient care. In fact, however, hospitals were paid essentially whatever they spent. There was no incentive for hospitals to operate more efficiently since all allowable costs were fully reimbursed. An incentive to spend existed; the greater a hospital's costs, the greater was its Medicare reimbursement. It was soon recognized that reimbursement on the basis of incurred costs did not offer sufficient incentives to control the rapid escalation of health care expenditures.

Since the inception of the program, Congress continued to take steps in program payment control reform. The two most prominent were the Tax Equity and Fiscal Responsibility Act (TEFRA) (P.L. 97-248) in 1982 which placed a limit on the cost per discharge on each payment on a reasonable cost basis and the enactment of the prospective payment system (PPS) (P.L. 98-21) in accordance with a payment schedule which classified 467 standard types of patient discharges.

In 1972, with the passage of the Social Security Amendments (Public Law 92-603), Congress authorized a broad program of experimentation with alternative methods of reimbursement for health care services. This legislation grew out of growing national concern about rapidly rising health care costs, a lack of incentives for prudent management of health resources and a belief that services could be purchased in a more efficient manner. Section 402(a)(1)(A) of the Social Security Amendments of 1967, Public Law 90-248 as amended by Section 222(b) of the Social Security Amendments of 1972, Public Law 92-603 (42 USC 1395b-1(a)(1)(A)), specifically calls for the Secretary of Health and Human Services to develop and engage in experiments and demonstration projects to determine whether, and if so which, changes in methods of payment or reimbursement for health care and services under health programs established by the Social Security Act, including a change to methods based on negotiated rates, would have the effect of increasing the efficiency and economy of health services under such programs through the creation of additional incentives to these ends, without adversely affecting the quality of such services.

Section 603(a) of Public Law 98-21, the Social Security Amendments of 1983, states that as part of the 1986 Annual Report to Congress, the Secretary is required to:

> ... include the results of a study examining the overall impact of State systems of hospital payment (either approved under section 1886(c) of the Social Security Act or under a waiver approved under section 402(a) of the Social Security Amendments of 1967 or section 402(a) of the Social Security Amendments of 1967 or section 222(a) of the Social Security Amendments of 1972, particularly assessing such systems' impact not only

> on the Medicare program but also on the Medicaid program, on payments and premiums under private health insurance plans, and on tax expenditures.

In response to this mandate, the Health Care Financing Administration (HCFA) under an existing agreement with Brandeis University ("Health Research and Policy Consortium--Cooperative Research Center") requested Brandeis University's Health Policy Center and the Urban Institute to study the impact of the State systems. The final report from this study is the primary resource document used in the preparation of this report and, unless otherwise noted, is the basis for all findings and conclusions reported herein.

Under the provisions of the statute, this study applies to four States: Maryland, Massachusetts, New Jersey, and New York. These four States had approved Medicare payment demonstration project waivers and operated "all payer" systems under a demonstration. Each of the four waiver States operated under a different payment system, and each provided for specific modifications to rates for each class of payer. The demonstration waivers for all the States have expired. However, the Social Security Amendments of 1983, under section 1886(c)(4), contained provisions regarding continued operation of these State reimbursement control systems upon expiration of the demonstration project, if the systems meet certain requirements. Regulations provided that annual reports should be prepared to keep hospitals apprised of potential future liabilities. While most of these waiver requirements address design elements of the systems (e.g., prospectivity, admission practices, and program

administration), one is clearly aimed at outcome. Congress required that the cost effectiveness of each system must be demonstrated over a 36-month period. These States could have applied for a waiver under section 1886(c)(4) which judged their cost effectiveness by comparing inflation in Medicare inpatient hospital payments in the demonstration State to the national rate of increase of inflation for Medicare payments. The States could have decided to have the test applied on the basis of aggregate payments or payments per inpatient admission or discharge. If HCFA determined that payments under the State system exceeded what would have been paid by Medicare in the absence of the waiver, subsequent payments to hospitals may have been reduced. This test was applicable for the three cost report periods beginning on or after October 1, 1983. No States have applied under this authority under section 1886(c)(4) and it therefore is not currently used as a measure of cost effectiveness.

New Jersey, which reimburses its hospitals through a mandatory prospective reimbursement system that sets separate diagnosis related group (DRG) prices for each hospital, has been operating under a section 1886(c)(5) waiver that uses the cost effectiveness test in section 1886(c)(1)(C). This section requires that payments under the State system cannot exceed what would otherwise have been paid by the Medicare principles of reimbursement.

Maryland operates a mandatory prospective reimbursement system. Most hospitals are reimbursed under a guaranteed inpatient revenue program on a case per discharge basis. Several hospitals are reimbursed a capitated amount for

providing services to a defined area, while two hospitals are paid a budgeted revenue amount based on total inpatient and outpatient revenues. Section 1814(b), added to the statute by the 1980 Amendments, contains a provision allowing Maryland to apply for continuation of its system. Approval for continuation was granted in June 1985. Approval provides for the continuation of reimbursement to Maryland hospitals until such time as: (1) a third-party payer is no longer subject to the system and reimburses a hospital on a different basis, or (2) the rate of increase per hospital admission for the system for the previous 3 years is greater than the national rate of increase in reimbursement for Medicare admissions for the same period.

The system operated in Massachusetts was a mandatory prospective reimbursement system that set a cap on each hospital's allowable revenues. The system expired on July 1, 1986.

New York operated an all-payer system from 1983 to 1985 that prospectively set an annual cap on each facility's total inpatient care revenues. (For a detailed description of the State systems, see Appendix A.)

The State all-payer systems establish rates that are paid by State Medicaid programs, Blue Cross plans, commercial insurers, and self-paying patients, as well as Medicare. Each system attempts to control total hospital revenues and to impose strong incentives for hospitals to control their costs. Their basic structure differs in many ways, and thus, each could have different implications for Medicaid, Blue Cross, and commercial payers.

This report analyzes the demonstration waiver period which ended June 30, 1984 for Maryland, December 31, 1984 for New Jersey, December 31, 1985 for New York and June 30, 1986 for Massachusetts. It does not analyze events that have occurred subsequent to the waiver demonstration period. It is likely that an analysis of the Maryland and New Jersey waiver data following the demonstration would produce different results.

Although the demonstration waiver approvals have ended, the issues addressed in this report remain of interest to Congress because of the potential cost consequences of the program's waiver authority for statewide all-payer systems. The first set of questions in this regard involves the effectiveness of State all-payer systems in controlling Medicare payments, costs, and utilization relative to the Medicare PPS. This report presents analyses of the impact of the waivers on the Medicare program using both actual hospital payment data from the entire country and simulations covering the four State systems. The data used for this analysis covered the period 1982 to 1984 during which time both State systems and the Medicare system were undergoing dramatic changes. For example, some hospitals in the study were under routine cost limits in 1982 and TEFRA cost limits in 1984, whereas other hospitals were paid under TEFRA cost limits in 1982 and PPS in 1984. Because of the limited size of the study and limitations on data, both approaches focus only on changes in inpatient hospital care and do not consider the effects on post-hospital or outpatient costs. This is particularly true in the outpatient areas where both State systems and PPS provide varying incentives to shift utilization and cost to outpatient areas. No attempt was made to analyze the extent of any shift under the various programs.

The report also discusses the maximum program payment cap for each of the four State systems and the performance of each system under its provisions. The second set of issues addressed in this report relates to the effectiveness of the State systems in controlling Medicaid payments. The principal issue is whether States with all payer systems are more successful in controlling inpatient expenditures than are States that establish Medicaid-only payment systems. Related issues are whether Medicaid-only systems are likely to be as cost-effective over the long term as all payer approaches and whether they are more likely to reduce access for Medicaid beneficiaries.

The third set of issues is whether the State systems result in more equitable treatment of commercial insurers; that is, are hospitals faced with cost controls under State systems or Medicare PPS more likely to increase charges to commercial payers. Such increases could result in higher premiums for private health insurance and reduced Federal tax payments by individuals and corporations. In effect, part of any savings would be offset by increased tax exenditures because of the automatic increase in the subsidy for health insurance offered by Federal tax law.

Finally, Congress was concerned with whether State rate regulation might thwart new competitive initiatives, e.g., the growth of Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), etc. The final chapter presents data from a series of case studies designed to determine if the all-payer system, by controlling rates, restrict opportunities for innovative financing arrangements. This report provides evidence on each of these issues.

Summary of Results

Medicare

The analyses of the impact of the waiver systems on Medicare payments compared changes between 1982 and 1984 in Medicare revenues per case, costs per case, admissions, and lengths of stay in both PPS and waiver hospitals. In order to obtain additional information on the impact of the waivers on hospital revenues, simulations prepared by HCFA on what revenues would have been under PPS had prospective payment been in place in the waiver States were examined. A number of caveats in conjunction with the findings exist: both State systems and the Medicare system were undergoing major changes during the period 1982-1984; long-term effects of Medicare's PPS are not reflected in the 1984 data, whereas State systems had matured by 1984; and the analysis does not capture the shift in outpatient hospital services and costs. The findings are as follows:

- Hospitals under prospective payment and hospitals in the all-payer States had similar growth rates in revenues per case between 1982 and 1984. Waiver States experienced slightly lower growth but the differences were not statistically significant.

- PPS and all-payer States were similar in their effects on changes in Medicare costs per case. Both the PPS and the waiver systems were superior to hospitals remaining under Tax Equity and Fiscal Responsibility Act (TEFRA) in containing hospital cost growth.

- The absolute levels of revenues per case were not significantly different between hospitals under PPS and those in the all-payer States when relevant variables such as wages, teaching status, region and case mix were controlled for.

- There is evidence that PPS had strong effects toward reduced hospital lengths of stay; these effects were not observed in the all-payer States. Coupled with the findings on reductions in costs per case, it appears that hospitals under PPS are reducing the variable costs associated with fewer hospital days. The all payer States, on the other hand, reduce the cost per case without reductions in length of stay.

- No differences were found between PPS hospitals and all payer hospitals with respect to changes in Medicare admissions.

- A second analytical approach in this report used HCFA simulations to produce estimates of hospital Medicare revenues per case in the all-payer States had PPS been in place. The simulation results rely on many assumptions. One key assumption that could be unrealistic in all four States is that there would be no additional "DRG creep," i.e., systematic increases in the average cost per case related to coding changes by hospitals following the introduction of PPS in the waiver States. These assumptions notwithstanding, the simulation results indicated that Medicare would have spent substantially more money in New York and less money in New Jersey, Maryland and Massachusetts relative to the State systems.

Medicaid

The analysis considered whether the waiver systems are more successful in controlling Medicaid outlays for hospital inpatient care or whether State Medicaid-only systems have more effective potential to reduce hospital payments. The findings indicate that:

- Statewide Medicaid expenditures for hospital inpatient care were generally less in all-payer States than under Medicaid-only PPS or traditional cost based arrangements.

- Each of the all payer States was successful in reducing hospital revenues per admission. New York and Massachusetts hospitals had lower revenues per day as well. (Hospitals will receive lower revenues per day or per admission if: (1) the State reimbursement policy results in the hospital industry having lower costs, or (2) Medicaid payments are low relative to costs. The first factor was clearly at work in explaining the success of all of the State systems in lowering overall Medicaid payments. The second appears to have been important in New York and Massachusetts because hospitals in these States also had significantly lower rates of revenues to costs.)

- All types of Medicaid-only prospective systems were successful in reducing Medicaid revenues relative to charges; however, only some were as successful as the all payer States in controlling the absolute level of per diem payments to hospitals. This suggests that, in

general, Medicaid-only systems reduced Medicaid payments without affecting the structure of the hospitals' costs or charges.

- The growth in Medicaid inpatient revenues was less in the all payer States than in the Medicaid-only States; most of the effect, however, was attributed to New York and Massachusetts.

- Medicaid-only systems had a substantial one-time reduction in growth in spending during the first full year of implementation. In later years, the systems did not have significantly different growth rates than cost based reimbursement systems.

- Medicaid-only systems appear to be more likely to affect access to hospitals for Medicaid patients. The all payer systems appear to have controlled Medicaid revenues by reducing the growth in expenditures per recipient. Medicaid-only systems appear to affect both the growth of recipients and expenditures per recipient.

Commercial Insurers

The principal issue examined in this section is whether costs are shifted to commerical payers under PPS and whether such shifting is less likely to occur under the waiver systems. Also examined, is whether differences existed in charges between commercial payers and Blue Cross in the waiver States compared with States under Medicare prospective payment.

- PPS does not appear to have adversely affected hospitals financially, and thus, did not create an incentive to increase charges to commercial payers.

- Hospitals with greater financial need, e.g., hospitals with Medicare or Medicaid payments that do not completely cover costs or hospitals with high levels of uncompensated care relative to costs, did not have higher levels of commercial markups. This effect was noted for PPS as well as all-payer systems.

- Evidence indicates that the levels of commercial markups, holding constant financial needs and other hospital characteristics, were lower in the waiver States. The level of commercial markups was more than 30 percent lower under the waiver systems. These markups were more in line with Blue Cross markups in the all payer States than in PPS hospitals. Controlling markups was a clear intent of the four waiver States and the data indicate that the legislated design worked as planned.

- Since commercial charges were substantially less in the all payer waiver States, it follows that private insurance premiums and tax expenditures in those States would be less than in the nonwaiver States. The results do not indicate that PPS increased charges, thereby creating either an extra premium or tax advantage in favor of the State systems. This conclusion may be drawn since there is no evidence to suggest that PPS led to increases in private hospital rates.

The case studies discussed in the final section indicate that insurers and HMOs are more concerned with a State's decision to adopt any form of hospital regulation than they are with the decision to seek a Medicare waiver. These payers do not view the impact of regulation in terms of its effect on absolute hospital costs, but rather through its effect on the various payers' relative costs. HMOs generally feel they are better off in unregulated environments, while insurers have tended to support the all-payer concept. However, recent adjustments in the products offered by commercial insurers may be reducing the intensity of their support for regulation.

II. MEDICARE

While the primary focus in this section is on hospitals' Medicare revenues (program payments), we also consider the impact of the waivers on costs and utilization patterns associated with Medicare patients. Three distinct approaches for measuring the impact of the State systems are used. The first uses samples of hospital level data to compare hospitals operating under a waiver to hospitals where payments are determined by PPS and TEFRA, the cost based reimbursement methodology in effect before PPS. In the second approach, simulations are employed to determine what waiver hospitals might have been paid under PPS, if no waiver had been granted. Both approaches focus only on changes in inpatient hospital care and do not consider how the waivers may have affected post-hospital costs relative to PPS. The third approach describes the Medicare cap, the maximum program payment allowed under the provisions of each waiver system, and other analyses of the data prepared for monitoring the cap calculations.

Hospital-Level Analysis

The hospital-level analysis measures differences in the rate of change in Medicare revenues, costs, and utilization across facilities between 1982 and 1984; the most recent years for which comprehensive financial data were available. The specific questions addressed are as follows:

- Did Medicare revenues per case grow more or less quickly under State waivers than under PPS?
- Did the waivers lead to more or less cost control among hospitals than did PPS?
- Did the volume of Medicare admissions in waiver hospitals grow at a faster or slower rate than hospitals covered by PPS?
- Were there differences in the rate of change in lengths of stay when the waiver hospitals are compared to PPS hospitals?
- Was there variation among the four waiver States with regard to the above questions?

Data for this phase of the study are drawn from two surveys of hospitals. The first is the Survey of Medical Care to the Poor and Hospital's Financial Status, conducted jointly by the Urban Institute and the American Hospital Association (UI/AHA). The survey was fielded in 1980, 1982, and 1984. The latter 2 years are used here. The original survey instrument was sent to all short-term non-Federal hospitals of 100 or more beds, plus a random sample of approximately 450 smaller hospitals. The 1984 data base was only fielded to those hospitals responding to the 1980 or 1982 surveys. Throughout this analysis, only short-term general hospitals were considered. Hospitals were asked to provide information on Medicare revenue and cost data and these are the primary data elements required in this study. Data on Medicare utilization and other hospital characteristics are derived from the AHA Annual Survey of Hospitals.

Outcome variables used in the UI/AHA analysis are defined for the periods, FY 82 and FY 84. Fiscal years are defined in terms of the hospitals' reporting periods. This spans a period in which Medicare cost-based reimbursement gave way to TEFRA limits and then ultimately to PPS for hospitals not covered by a State waiver.*

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* Since hospitals' fiscal years do not necessarily correspond to Federal fiscal years, we observe a mix of Medicare hospital payment systems during FY 84. This facilitates our ability to separate out the impact of PPS, TEFRA, and the State waivers.

To answer the questions outlined earlier, the percent change in revenues per admission, costs per admission, admissions, inpatient days, and average lengths of stay associated with Medicare beneficiaries were defined for each hospital. The financial variables (revenues and costs) could not be created for for-profit hospitals since virtually none of them responded to the UI/AHA surveys. While the omission of for-profit hospitals could alter the findings, prior research does not suggest that they have responded to PPS in a substantially different manner than other private hospitals. Guterman and Dobson (1986) show that for-profits reduced length of stay and costs by less and earned smaller Medicare margins than not-for-profit facilities.

Tabular analyses were employed to make initial comparisons between the rates of change in our outcome indicators across PPS, TEFRA, and waiver hospitals. TEFRA is included as a comparison group, because many hospitals were still covered by this system in FY 84. Recall that, as PPS was implemented, only hospitals whose FY 84 start date was on or after October 1, 1983, were covered by PPS in FY 84.

An important data limitation to recognize is that in the study no hospital had more than 1 year on PPS. Hospitals with fiscal years beginning October 1, 1983 and January 1, 1984 were labeled PPS and had 1 year on PPS and 1 year on TEFRA. PPS data were not available for hospitals with fiscal years beginning April 1 and July 1, 1984. Thus these TEFRA hospitals had 1 year on TEFRA and 1 year on cost reimbursement. Thus, the long term trends in PPS are not

reflected in the data. In addition, hospitals in the study have different fiscal years (e.g., New York's fiscal year ends December 31, Maryland's fiscal year ends June 30). While the tabular results can be revealing, they do not take into account that hospital characteristics vary across payment systems and that these characteristics may relate to the outcome variables. Therefore, rather than focus on simple differences in the rates of change among PPS, TEFRA, and waiver hospitals, multivariate regressions were used to consider adjusted differences by controlling for characteristics such as bed size, teaching status, ownership, region, and community type (urban/rural).

Linear regressions were estimated with TEFRA and waiver categorical variables to capture differences between hospitals paid under PPS and TEFRA as well as between those covered by PPS and the State waivers. The waiver States were also analyzed individually relative to PPS in regressions that omitted the waiver variable. The coefficient estimates for these variables are reported as the adjusted differences in Tables 1 and 2. While hospital characteristics have been taken into account, the study did not adjust for changes taking place in hospital medical practices during the period. For example, shifts in the use of outpatient hospital services and the cost of these services were not factored into the analysis.

Results

Findings from this stage of the study are reported in Tables 1 and 2. Table 1 contains analysis of Medicare revenues per case and costs per case. The samples used for these variables contained 651 and 953 hospitals, respectively. Table 2 reports on the utilization variables and is based on a sample of 3,136 hospitals.

Table 1

1982 Levels, 1982-84 Percent Change, and Adjusted Difference in Percent Change* for Medicare Revenue per Case and Cost per Case by PPS, TEFRA, and WAIVER

	Medicare Revenue Per Case				Medicare Cost Per Case			
	(N)	1982 Level	Percent Change 1982-84	Adjusted Difference	(N)	1982 Level	Percent Change 1982-84	Adjusted Difference
PPS	(283)	$3,092	18.8%	--	(417)	$3,032	7.6%	--
TEFRA	(271)	3,268	17.7	-0.1	(415)	3,079	18.1	10.5%[a]
WAIVER	(97)	3,931	12.4	-3.0	(121)	3,600	10.6	2.0
MD	(10)	3,220	11.5	-9.3	(12)	3,152	8.4	0.2
MA	(11)	4,485	11.3	-2.3	(15)	4,035	10.1	2.4
NJ	(22)	3,142	19.6	5.4	(31)	3,413	12.9	4.5
NY	(54)	4,271	9.8	-3.6	(64)	3,675	10.1	1.5

* Adjusted differences shown are relative to hospitals covered by PPS in FY 84 and were derived from a regression that controlled for differences in hospital ownership, bed size, teaching status, census region, and community type across payment systems.

a. Significantly different from zero at the 1 percent level.

Table 2
1982 Levels, 1982-84 Percent Change, and Adjusted Differences in Percent Change* for Medicare Inpatient Hospital Care by PPS, TEFRA, and WAIVER

	Admissions			Inpatient Days			Length of Stay(Days)		
	1982 Level	Percent Change 1982-84	Adjusted Difference	1982 Level	Percent Change 1982-84	Adjusted Difference	1982 Level	Percent Change 1982-84	Adjusted Difference
PPS (1362)	2,030	-0.8%	--	19,436	-15.5%	--	8.8	-14.5	--
TEFRA (1604)	2,167	3.0	3.9%[a]	21,520	-5.5	10.0%[a]	9.1	-7.8	6.6%[a]
WAIVER (220)	2,813	4.8	0.9	34,980	-2.0	9.3[a]	12.1	-5.3	9.1[a]
MD (33)	3,511	10.9	7.7[a]	41,097	-0.3	10.4[a]	11.6	-9.3	4.0[c]
MA (93)	2,824	4.9	-0.2	34,788	-1.3	9.9[a]	12.0	-5.0	10.3[a]
NJ (35)	2,738	5.3	-0.7	34,545	-2.5	7.4[b]	12.3	-6.2	8.5[a]
NY (59)	2,450	1.0	-2.8	32,119	-3.8	8.6[a]	12.3	-3.1	12.2[a]

* Adjusted differences shown are relative to hospitals covered by PPS in FY 84 and were derived from a regression that controlled for differences in hospital ownership, bed size, teaching status, census region, and community type across payment systems.

a. Significantly different from zero at the 1 percent level.
b. Significantly different from zero at the 5 percent level.
c. Significantly different from zero at the 10 percent level.

The importance of this regression analysis is immediately evident by examining differences in the rate of change in Medicare revenues per case. Looking only at the average percent increases in revenues per case between 1982 and 1984, we would conclude that rates of change were higher in PPS hospitals than in waiver hospitals; 18.8 percent as compared to 12.4 percent. These data also would show that not all waiver programs constrained revenue equally. While Maryland, Massachusetts, and New York were below PPS, New Jersey had increases in revenue above PPS; however, only the New York and Maryland differences were significant. These pure differences in growth rates may be due, in part, to a different composition of hospitals in the PPS and waiver States. Once we control for the hospital characteristics, the apparent 6.4 percent growth differential is reduced to 3.0 percent and is no longer statistically significant. This statistical evidence suggests that it would be extremely unlikely for waiver hospitals, as a group, to have experienced greater growth in Medicare revenues per admission than their PPS counterparts. However, it also suggests that the waivers did not impose tighter controls on Medicare revenues than PPS. It appears that a key condition that the waivers were expected to meet, e.g. the ability to control Medicare revenues, in fact, has been met during year one of PPS.

The adjusted differences in the percent change in Medicare revenues per case vary across the waiver States. The magnitude of the adjusted differences between PPS and New York and Massachusetts is smaller than that of the simple differences, while the adjusted differences associated with Maryland and New Jersey are larger. Although none of the State-specific adjusted differences are significantly different from zero, the size of Maryland's differential suggests that its significance might be improved if we observed a larger sample of hospitals in that State. Unfortunately such data are not available.

Our analysis of the rate of change in Medicare costs was affected by the choice of statistical methodology. The simple difference indicates that hospitals in waiver States, as a group, had 3.0 percent higher growth in Medicare costs than hospitals covered by PPS (10.6 percent versus 7.6 percent). However, the adjusted difference shows that the rate of change in Medicare costs was statistically the same among waiver and PPS facilities. It is interesting to note that both of these groups of hospitals had significantly less cost inflation than facilities covered by TEFRA between 1982 and 1984. Although the four waiver programs and PPS are substantially different in structure and provide a variety of cost containment incentives to hospitals, they all seem to be successful in reducing growth in Medicare hospital costs when compared to the major payment alternative.

The strong similarities between waiver and PPS hospitals, with respect to financial indicators, do not extend to patterns of Medicare inpatient use. Despite comparable rates of change in costs per case, average Medicare lengths of stay fell at a rate almost three times as fast under PPS as in waiver environments (14.5 percent versus 5.3 percent). Each of the waiver States had rates of decrease that were lower than PPS. The slower decreases in lengths of stay among waiver facilities led to slower reductions in the total volume of Medicare days per hospital. Overall, there was no difference between the rate of change in admissions in the waivers and that in PPS. However, Maryland hospitals did experience faster growth in admissions than PPS providers. Since otherwise similar hospitals displayed similar rates of change in revenues per case and admissions, it seems likely that total Medicare revenues grew at about the same rate under PPS and under the State waivers as a group. This statement

seems to hold up in three individual States (Massachusetts, New Jersey, and New York). However, the higher rates of growth in admissions in Maryland make us somewhat more tentative regarding conclusions about the change in total Medicare revenues in that State.

Taken together, the Medicare costs and length of stay results suggest some interesting hypotheses for future research on the differences between the cost containment mechanisms in PPS and the waiver systems. Since PPS is a case mix adjusted per case payment system covering a single payer, hospitals have clear incentives to treat patients from this payer in the least number of days medically possible. This allows them to reduce variable costs for certain inputs (e.g., medical supplies and staffing) associated with individual Medicare patients, while leaving the fixed plant intact to treat other payers' patients. In the medium to long run, some adjustments to plant size (i.e., number of available beds) may also be undertaken if PPS payments do not adequately cover the hospital's fixed cost. The incentives for cost control are strengthened by the fact that the hospital is allowed to keep the entire difference between Medicare payments and the costs of treatment.

The waivers, on the other hand, work less through indirect financial incentives and more through direct regulatory controls on hospitals' total revenues. By limiting the growth in all payers' payments, the waiver systems implicitly set a target budget within which the facility must operate. While some utilization shifts may be observed as part of a waiver hospitals' cost containment strategy, the all-payer nature of these systems suggests that no single payer is likely to be the sole target of these efforts. Since this is not so in PPS, the larger reductions in Medicare lengths of stay under PPS are not surprising. What the waiver States

show, however, is that, when faced with revenue limits, hospitals can and do contain expenditures. They succeed by employing a more broad-based strategy than is used in PPS hospitals.

Simulation Analysis

The data used in the simulation analysis are drawn from a series of Intermediary Medicare Waiver Payment Reports developed for or by three of HCFA's regional offices (the Boston Regional Office for Massachusetts, the New York Regional Office for New Jersey and New York, and the Philadelphia Regional Office for Maryland). These reports contain data on actual hospital payments made under the waiver systems for each fiscal year as well as the number of Medicare discharges, bills, and patient days paid. In addition, results of a simulation of what would have been paid without the waiver were also used. These simulated amounts, based on the claims actually processed, are disaggregated into payments that would have been made under PPS rules (i.e., basic DRG payments, capital cost pass-throughs, and indirect medical education payments) and those that would have been based on reasonable costs (i.e., payments to hospitals for distinct hospital parts excluded from PPS and payments for outpatient services).

All of the data in the reports were prepared by the intermediaries with instructions from HCFA. Although the waiver amounts reflect the best accounting of payments made in a given period, at the time the report was produced, nevertheless, the simulated PPS amounts reflect estimates. The notes presented with the reports suggest that slightly different simulation methodologies were used. However, a number of unifying threads were

identified. First, an effort was made to process all claims through the PPS Grouper program based on the diagnosis information available to assign a DRG payment amount. Since Maryland issued a report (subject to revision) that included less than 100 percent of claims in the simulation, one is led to conclude that not all claims could immediately be assigned to a DRG.

Second, the capital pass-throughs were estimated on the basis of prior years or unaudited cost reports. Massachusetts used FY 82 audited reports trended forwarded to FY 84, New Jersey used audited FY 82 reports for FY 84 costs, Maryland used unaudited current year reports, and New York provided no documentation in this area. The actual impact of these necessary compromises on simulated PPS payments cannot be determined. Finally, all States implicitly assume no changes in utilization of inpatient services (i.e., admissions) or outpatient services if PPS were to replace the waiver. While this may be the only defensible assumption in situations where the payment comparisons are relatively close small shifts in utilization patterns could reverse conclusions about the cost advantages or disadvantages of the waivers. More detailed discussions of the individual State methodologies and assumptions accompany the presentation of results.

Since PPS is a reimbursement system that covers inpatient care only, it would be useful if Medicare inpatient waiver payments could be compared to simulated inpatient payments associated with PPS. With the exception of New York, however, all of the PPS waivers granted covered outpatient services as well as inpatient services. As such, the regional offices indicate that direct inpatient and outpatient waiver pa[illegible]nents, along with any retroactive payment

adjustments,must be treated together to avoid potential arbitrariness in deriving a distinct inpatient amount. In the results that follow, therefore, payment amounts shown for New Jersey, Maryland, and Massachusetts reflect all services included in their waivers.

Results

A summary of the Intermediary Medicare Waiver Payment Reports for the four waiver States is shown in Table 3. Except as indicated in the table footnotes, the results are displayed for the first fiscal year in each State during which PPS would have been in effect, if no State systems waiver had been granted. The numbers reported provide a comparison of total Medicare payments to hospitals actually made under the waiver to an estimate of what would have been paid under PPS. A basic assumption underlying all of the simulated amounts is that those discharges paid through the waiver are the same ones that would have occurred in PPS. This means that, not only would the volume of cases remain unchanged, but the diagnosis information reported would also be the same. To the extent that hospitals gain from more detailed diagnosis information in PPS by receiving higher DRG payments, it seems likely that the PPS simulated payments understate what would have been paid for these same cases under PPS. This form of "DRG creep" is documented as a real phenomenon in Ginsburg and Carter (1986). It is impossible to know the precise magnitude of this process. However, in States where PPS seems to provide small savings relative to the waivers, DRG creep should be considered in evaluating the real financial impact of a switch from a waiver to PPS. With this in mind, we turn to the results.

The data show that Medicare program payments under the waivers in Maryland, Massachusetts and New Jersey were more than PPS would have been, while payments in New York were less. New Jersey's system apparently was the most expensive for Medicare. The results indicated a cost of $96.9 million more than the simulated PPS payment, a potential savings of 7.4 percent of the waiver payment. Massachusetts' system cost $41.6 million more than the simulated PPS payment, a potential savings of 3.5 percent of the waiver payment. Slightly lower potential savings were apparent in Maryland, whose $15.5 million cost disadvantage relative to PPS represents 2.2 percent of actual outlays. New York's system apparently saved the most money for Medicare. Had the waiver in this State not been in place, Medicare PPS payments would have exceeded actual payments by 8.5 percent or $243.5 million.

The simulations show clearly that Medicare fared better in the waiver programs than it would have under PPS for the fiscal years reported. Of course, this result is dominated by the amount of waiver savings in New York, a State with about 60 percent of the total payments made through the four State systems combined. Since the time of the simulations, both New York and Massachusetts have decided to discontinue their waivers and have their facilities reimbursed through PPS. While this should reduce payments in Massachusetts, it most certainly will increase program outlays in New York. The remaining two waiver States, Maryland and New Jersey, have losses relative to PPS. However, for the reasons cited in the footnotes of Table 3, both of these States simulated PPS payments have been reported subject to numerous caveats.

For example, the 1984 New Jersey and Massachusetts data use 1982 amounts for capital costs and other pass-throughs to derive the 1984 PPS amounts used. The 1984 all-payer rates used in the simulation for Massachusetts are based on unaudited interim rates which will require revision. Effective January 1, 1985, the State of New Jersey received a waiver of the Medicare principles of reimbursement under the authority of Section 1886(c) of the Social Security Act. In accordance with the waiver, the Medicare payments under the State system cannot exceed what would otherwise have been paid under the Medicare reimbursement principles. Due to the numerous changes in both the State system and Medicare PPS since January 1985, subsequent simulation reports monitor systems significantly different than the systems in place prior to January 1, 1985. Therefore, firm conclusions about potential future savings or losses from the simulations for these particular programs cannot be drawn from the data presented.

Table 3
Simulated Comparisons of Medicare Hospital Payments
Under State Cost Control Systems[a]

State	Fiscal Year	State System	PPS Simulation	Difference (State System-- PPS Simulation
Maryland[b]	1985	$ 705,612,757	$ 689,970,504	$ 15,642,253
Massachusetts[c]	1984	1,191,548,232	1,149,974,378	41,573,854
New Jersey[d]	1984	1,303,194,198	1,206,332,801	96,861,397
New York[e]	1984	2,857,282,748	3,100,803,743	-243,520,995

Source: HCFA Intermediary Medicare Waiver Payment Report.

a. All amounts shown, other than those for New York, include payments for outpatient services. Outpatient services are excluded for New York since they were not included in the State's cost control system.

b. In the Maryland report that preceded the one reported here, 3.5 percent of discharges could not be processed through the Grouper program for a variety of reasons. That report omitted PPS and waiver payments for these claims and also excluded some waiver payments associated with claims that were processed through the system. The 3.5 percent of claims were added to the PPS simulation for the present report under the assumption that they would cost the average simulated payment per discharge for the 96.5 percent of Medicare discharges processed. Indirect medical education was amended accordingly. The intermediaries have been funded to attempt to actually process the 3.5 percent through Grouper and develop a PPS simulation more closely reflecting actual DRG rates. A revised estimate is expected.

c. Massachusetts provided the most heavily footnoted waiver report of the four States. Several of the footnotes attempted to quantify the impact of changing certain simulation assumptions or auditing costs reports on the final cost comparisons. The note indicated that the PPS simulated payment might be reduced by $23,984,302 as a result of PRO denials and $9,163,750 if transfers between PPS hospitals could have been correctly measured. However, the notes went on to show that if FY84 costs reports were used instead of the trended FY82 reports, capital pass-throughs could increase by $20,151,534. The waiver payment might be expected to increase by $3,705,156 as the result of inflation, volume adjustment, and exceptions when the final audited FY84 cost reports were processed. None of these factors are included in the figures shown. If they had been, the basic conclusion of the comparisons would not be altered.

d. The New Jersey report was prepared 12 months after the conclusion of the fiscal year and includes all claims processed to that point. The pass-through costs as presented do not reflect the total bad debt expense for the year. Also, the 1984 PPS numbers use 1982 base year capital costs. The report was developed primarily for internal management purposes.

e. This comparison is for calendar year 1984. No detailed notes of any type were provided with the New York waiver payment reports.

Cap Analysis

Each waiver system contained a defined formula which specified Medicare's maximum liability under its payment methodology. This upper payment limit, or cap, is closely monitored, utilizing payment data furnished by fiscal intermediaries. The following presents a description of each cap formula and each system's performance under its terms.

Maryland

The cap test used to monitor the Maryland waiver is the lower of two tests calculated each year. these two tests are designated as CAP I and CAP II. The lower of the two amounts derived from these two test calculations becomes the actual statewide cap on reimbursement for Medicare expenditures (effective cap). If expenditures under the payment methodology are lower than the effective cap, then the amount calculated under the payment methodology will be the basis of reimbursement. If expenditures are greater than the limitations set by the effective cap, a recapture of excess payments from providers is necessary.

Computation of CAP I begins with the 1976 Medicare cost report for both inpatient and outpatient costs. The central idea of the method is to translate this 1976 base year cost report to a cost report applicable to the current year by application of specific inflation adjustments to various elements of a hospital's cost structure. After this is done, an aggregate average cost per inpatient admission is computed. The current year's average cost per inpatient admission is compared to the previous year and the resulting percentage increase is CAP I.

CAP II is computed by taking total national Medicare inpatient expenditures for the current year and dividing this amount by total Medicare admissions. The resulting Medicare national average cost per admission is compared to the prior year and the resulting percentage increase becomes CAP II.

During the duration of the Maryland waiver system, the CAP I computation was always the lower of the two CAPS. Therefore, in each year the base year total inpatient and outpatient costs inflated forward became the estimate of total Medicare expenses for the year under cost reimbursement. This amount, compared to actual Medicare payments for the current year, results in the Medicare cap determination.

According to payment data from the Maryland Medicare intermediaries, the aggregate savings under the CAP betweeen 1978 and 1985 totaled $165,755,059, with an average annual savings under the cap of 4.0 percent.

Massachusetts

The Massachusetts cap, as established by the terms and conditions attached to the waiver award letter to the grantee, the Massachusetts Hospital Association (MHA), limits the aggregate rate of increase in Medicare payments over the 3 years of the demonstration (FY 1983, FY 1984, and FY 1985) to the average nationwide rate of increase in Medicare payments. The cap calculations and the procedures for recoupment of the cap savings or the cap overpayment are set forth in a detailed cap plan, which was developed collaboratively by HCFA and MHA staff. The final plan was submitted by the MHA and approved by HCFA.

Specifically, if the rate of increase for Medicare payments to the participating Massachusetts hospitals occurred below the national rate of increase by no more than 1.5 percent, there would be no impact on the hospitals (i.e., no cap savings or cap overpayment). However, if the actual Massachusetts rate of increase was more than 1.5 percent below the national rate of increase, then the hospitals and HCFA would share equally in the cap savings.

The calculation of the cap and the cap savings or cap overpayment may be briefly summarized as follows. The base year for the cap calculations is composed of the actual Medicare payments to the hospitals for the year immediately preceeding the beginning of the demonstration. Because the hospitals have two different fiscal years, for 99 hospitals the base year is fiscal-year-ending (FYE) September 30, 1982 (FYE September 30, 1982) and for nine hospitals the base year is FYE June 30, 1983 . To calculate the cap for the first demonstration year, the cap base year payments are trended forward by the Medicare national rates of increase. The caps for the second and third demonstration years are calculated by trending the year 1 cap and year 2 cap levels forward by the national rates of increase. The caps for years 1, 2, and 3 are added together to determine the aggregate or cumulative cap. To determine the cap savings or cap overpayment, the payments for years 1, 2, and 3 are totaled and compared to the cumulative cap. If the payments exceed the cumulative cap, the hospitals must repay HCFA.

The first and second annual cap calculations showed that Medicare payments to participating Massachusetts hospitals exceeded the cap. In accordance with the approved cap plan, each hospital's cap recoupment amount was computed based

on that hospital's proportionate share of Medicare payments to all 108 hospitals. In addition, cap recoupments were generally requested in equal quarterly payments according to the schedule specified in the cap plan. The cap overpayment for years 1 and 2 totaled $49,907,645. Of this amount, $30,925,388 had been recouped from the hospitals as of October 21, 1986.

On October 21, 1986, legislation affecting the Massachusetts cap recoupment process, the Omnibus Budget Reconciliation Act (OBRA) of 1986, was enacted. Section 9307(b), entitled "Massachusetts Medicare Repayment," of OBRA 1986 postpones recoupment of the cap overpayment from the date of enactment of the legislation to January 1, 1988. Section 9307(b) did not eliminate the cap or change the due dates for the quarterly cap payments, but rather stipulated a period during which HCFA is precluded from taking any recoupment actions and during which the hospitals do not have to make cap payments. Therefore, the hospitals will continue to receive the quarterly cap payments notices as usual, but they will be instructed that they are not required to make the payments until January 1, 1988.

The third annual cap calculation, using updated national rates of increase and updated expenditure data, will include all 3 demonstration years for the first time. Although the third annual cap calculation has not been finalized at this time, it is expected that the total 3-year cap overpayment will be approximately $80 million.

The final cap calculation is scheduled for December 1989. It is expected that even before the final cap calculation, the data will be sufficiently complete so

that few, if any, further changes will be required in the national rates of increase (ROI) and the Massachusetts Medicare expenditure data for the cap base year and the 3 demonstration years.

Determining the significance of the fact that the Massachusetts hospitals exceeded the cumulative cap by approximately $80 million over the 3-year period is somewhat complex. Without an indepth evaluation of the payments, costs, and other factors it is difficult to draw a definitive conclusion on why the cap was exceeded. Certainly, one of the major reasons the cap was exceeded is directly related to the fact that the nationwide implementation of the PPS caused the nationwide rate of increase in Medicare expenditures to be much lower than projected at the start of the demonstration. Another major factor is that, while Massachusetts admissions declined between FY 1983 and FY 1985, they did not decline as rapidly as the admissions of hospitals under PPS. In addition, admissions and days of care for other payers in Massachusetts followed a different pattern than Medicare, as a result, Medicare's share of the hospitals' total payments increased. Unlike PPS, where payment is directly related to volume (except for pass-throughs), in this system total revenue is the primary emphasis, and except for some modest volume adjustments, the amount paid by each payer depends primarily on the payer's share rather than absolute volume. This can have a significant negative effect on the cap comparison when volumes are declining statewide.

New Jersey

The New Jersey Medicare cap calculation was based upon each hospital's actual Medicare costs for the calendar year immediately preceding the year during which the hospital entered the waiver. The base year costs were adjusted for inflation using a market basket economic factor plus 2 percent. In addition, a case mix/volume adjustment was applied, in order to eliminate the effects of such changes. Finally, the base year costs were to have been increased for any certificates-of-need approved or other new services and for any legal and management changes which were implemented during the demonstration. The demonstration cap was cumulative, with actual aggregate Part A hospital payments for the 5-year period compared to the total Medicare cap calculation for the same period. Should total actual Medicare payments have exceeded the cumulative cap, the excess amount would have been recouped from the individual hospitals according to their percent of Medicare dollars during the final year of the cap calculation.

According to payment data from the New Jersey Medicare intermediaries, total Part A Medicare payments for the 5-year demonstration amounted to $4,236,000,000 while base year costs adjusted for inflation and case mix/volume were $4,365,000,000, a difference of $129,000,000. Although the State calculated the costs for certificate-of-need and any legal and management changes, HCFA did not concur with the calculation. However, even without the adjustment for new services, total Part A demonstration payments were well within the Medicare cap limits and a recoupment was not necessary.

New York

The 3-year statewide hospital inpatient payment waiver system ended on December 31, 1985. The waivers were awarded with the condition that Medicare inpatient hospital payments in New York would be capped at the nationwide rate of increase. The grantee, the New York State Department of Health, developed regulations which established a plan for calculating the cap and recouping any overpayment from the hospitals. As specified for the Massachusetts waiver, the cap plan specifically stated that the New York State rate of growth for Medicare expenditures should not exceed the national average rate of increase for Medicare inpatient expenditures over its 3-year period. The cap plan also called for an annual calculation of the cap.

The data submitted by the State for the first 2 years of the demonstration (1983-1984) showed that New York met the requirements of the Medicare cap by a comfortable margin. The New York rates of growth for Medicare inpatient expenditures for the first 2 years were 7.7 percent and 5.5 percent respectively, whereas the national rates of increase were 10.8 percent and 10.0 percent for the same periods. While the State is still obtaining and analyzing the Medicare expenditure data for 1985, it is highly unlikely that the cap will be exceeded over the 3-year demonstration when all of the data have been finalized.

Summary

The results show that the Medicare program was not adversely affected by the four waivers granted to State systems under PPS. While the cost control strategies of PPS hospitals seem to manifest themselves in large relative reductions in Medicare lengths of stay, the waivers' all-payer coverage appear to encourage more broad based approaches to keep expenses within mandated total revenue limits.

For the period 1982 to 1984, revenues per admission and the number of admissions were growing at about the same rate in hospitals covered by a waiver as in hospitals paid through PPS. This indicates that waiver hospitals did not have greater increases in Medicare revenues than their PPS counterparts. Simulation analyses indicate that major savings were particularly apparent in New York. A sizeable simulated loss was found for New Jersey while smaller losses were discovered in Maryland and Massachusetts. The withdrawal of New York from waiver status appears likely to result in Medicare's loss of substantial amounts of money in New Jersey and smaller amounts in the remaining waiver systems.

The performance of the waiver systems can also be documented by the performance under each State's demonstration cap. Maryland, New Jersey, and New York clearly succeeded in meeting the terms of their cap requirements. Massachusetts exceeded its cap; however, definitive conclusions as to why this occurred remain difficult to determine at this time.

III. MEDICAID

The issue to be examined is whether States with waivers from Medicare PPS are better able to control Medicaid expenditures through their ratesetting programs, or whether they could obtain deeper discounts by establishing Medicaid-only prospective payment systems. The argument in favor of all payer systems is that if they are successful in controlling hospital costs in general, the Medicaid program would benefit. Medicaid rates would be constrained without hospitals seeking to avoid less profitable Medicaid patients. The alternative argument would be that Medicaid programs acting alone would not be constrained by concerns over hospital financial viability or their capacity to deal with uncompensated care, and thus, could strike better bargains in negotiating with hospitals. The concerns one would have with this type of system are that the effects might not be long lasting; that discounts relative to hospital costs could be achieved over the short term, but that hospitals would become increasingly less likely to admit Medicaid patients. In order to keep access from deteriorating, States would have to keep their rates in line with rates paid by other payers.

Two recent studies of Medicaid payments to hospitals under alternative ratesetting systems demonstrate that Medicaid programs are somewhat more cost-effective under all payer systems. The magnitude of these findings depends on the type of Medicaid-only reimbursement system. Medicaid-only prospective payment systems with particularly strong efficiency incentives are more likely to generate greater Medicaid savings than payment systems without strong

incentives. Some evidence that the cost containing effect of Medicaid-only systems is short lived is also provided. This is in contrast with all payer systems where the benefits seem to be longer lasting.

Description of Reimbursement Systems

Appendix I of this report provides detailed descriptions of the four all payer ratesetting systems. In this section, we will briefly describe the many choices States have in designing Medicaid-only reimbursement systems.

The most basic arrangement used in Medicaid programs is the traditional "reasonable cost" reimbursement system used by the Medicare program prior to the introduction of the DRG system. In this arrangement, hospital costs are allocated to Medicaid patients using conventional accounting rules. As of June 1985, only 14 States still used Medicare cost based principles to reimburse hospitals for services provided to Medicaid recipients.

Some States have retained the retrospective nature of their systems, but have imposed prospective limits on the rate of increase in allowable costs that they would reimburse. That is, hospital costs would only be reimbursed if their costs increased by no more than a prespecified rate.

Prospective arrangements can vary across many dimensions; the most basic is perhaps the unit of payment. Most States establish prospective rates on a per diem basis. However, because the incentives under per diem arrangements are to increase lengths of stay, some States have adopted systems which reimburse

on a per admission or a per case basis. Arrangements to reimburse on a per discharge basis require particular attention to case mix, otherwise the incentives would be strong to discriminate against high cost cases. The Medicare DRG system is a direct response to the need to have a case mix adjustment on a per admission system. Unlike the per diem arrangement, a per admission system encourages hospitals to reduce lengths of stay.

Some States with prospective systems establish peer groups for the purpose of determining ceilings on rates. Hospitals can be grouped by size, teaching status, geographic area, and perhaps case mix. The objective of peer grouping is to establish homogenous groupings in terms of factors such as input prices, case mix, and teaching status.

Another decision in developing prospective rates is how frequently to change the base upon which prospective rates are set. The reimbursement system will establish prospective rates based on costs in a base year and trend these costs forward to future periods. A prospective system which annually establishes a new base will have weaker incentives than one that does not. A hospital in a system using annual rebasing can let its costs increase and exceed its allowed rates in a given year knowing that in the following year its rates will be higher. While it will lose money in the current year, it is assured of a larger stream of revenues in the future. A hospital that strictly controls its costs will receive a lower rate in a future year. In contrast, a reimbursement system that rebases infrequently will have stronger incentives for cost containment. A hospital will have rates set on the basis of its base year costs, trended forward, only updated to take into account expected inflation. A hospital will not be able to "game"

the system as easily by permitting its costs to rise, because those costs will not affect its subsequent reimbursement rate for a number of years.

A number of other adjustments are sometimes made in setting prospective rates. One is an allowance for uncompensated care in which the reimbursement system provides some additional amount of payment to hospitals with a disproportionate share of uncompensated care. Some States adjust for volume by altering a hospital's rate when the actual volume of cases, services, or revenues exceeds or falls short of some prospectively determined level. For example, a State may provide some additional payments to a facility to cover fixed costs if volume is not as great as anticipated. Finally, a State may require that a hospital's payment rates be computed as if the facility achieved some minimum occupancy level, independent of the actual occupancy rate achieved. This tends to reduce average payments for hospitals with low occupancy rates.

California introduced a very different approach to prospective payment for its Medicaid program in 1983 when it established its "selected provider contracting program" (MediCal) under which the State negotiated all-inclusive per diem rates on an individual basis with eligible hospitals. Once the rate was determined, hospitals had to absorb costs that exceed the negotiated level. MediCal patients were required to go to a contracting hospital; contracting facilities were required to treat patients coming to them. Contracting applied to over half of California's hospitals and over 75 percent of its hospitalizations. Hospitals outside of the contracting system were subject to the old State system of peer group ceilings on a per discharge basis. Rates for the first year of the California

contracting system were estimated to be 16 percent below what they would have been under the previous system.

Characteristics of the hospital reimbursement systems in 25 of the largest States are shown in Table 4.

Methods of Analysis

As indicated earlier, two different studies were undertaken to analyze the relative effects of all payer and Medicaid-only reimbursement systems. The first uses data on hospital revenues, costs and charges to assess the effect of different kinds of all payer and Medicaid-only reimbursement policies. The second uses Medicaid program expenditure data to examine: (1) the short- and long-term effects of different policies on inpatient hospital expenditures, and (2) the impact of policies on recipients versus expenditures per recipient.

The objective of the first study was to test whether different Medicaid reimbursement approaches have different effects on hospitals' Medicaid revenues. The effects of the different reimbursement approaches were analyzed using multiple regression techniques. The unit of observation was the individual hospital. Data on hospital revenues from 612 hospitals in 1980, 761 hospitals in 1982, and 579 hospitals in 1984 were obtained. These hospitals came from 25 different States with very different reimbursement systems.

The study pooled data from all 3 years with monetary variables, e.g., Medicaid revenues, costs, charges, deflated to 1980 using the HCFA market basket index. The analysis tested the relative effect of each of eight alternative

Table 4

Characteristics of State Hospital Reimbursement Systems, 1984

	System Type	Unit of Payment	Payers Covered	Ceilings	Strong Efficiency Incentives	Uncompensated Care Allowances	Volume Adjustment	Minimum Occupancy Requirement
Alabama	P	PD	MO	C		UC		OCC
California	SC	PD	MO	NC		UC		
Colorado	P	PD	MO	C	SE			
Florida	P	PD	MO	C		UC		
Georgia	P	PC	MO	C			VA	
Illinois	P	PD	MO	C	SE	UC	VA	
Indiana	R	PD	MO	NC				
Iowa	P	PD	MO	NC		UC		
Kentucky	P	PD	MO	C		UC		OCC
Louisiana	R/P	PC	MO	NC				
Maryland	P	TR	AP	C		UC	VA	
Massachusetts	P	TR	AP	NC	SE	UC	VA	OCC
Michigan	P	PD	MO	C	SE	UC	VA	
Minnesota	P	PC	MO	NC	SE	UC		
Missouri	P	PD	MO	NC	SE	UC		
New Jersey	P	TR	AP	C		UC	VA	
New York	P	TR	AP	C	SE	UC	VA	OCC
North Carolina	P	PD	MO	C		UC	VA	
Ohio	R	PD	MO	NC				
Pennsylvania	R/P	PD	MO	NC				
Tennessee	P	PD	MO	NC		UC		OCC
Texas	R	PD	MO	NC				
Virginia	P	PD	MO	C		UC		
Washington	P	PD	MO	NC		UC	VA	
Wisconsin	R/P	PC	MO	C		UC	VA	OCC

CODE

R = Retrospective
R/P = Retrospective - Rate of Increase Controls
P = Prospective
SE = Strong Efficiency Incentives
SC = Selective Contracting Program in California
MO = Medicaid-Only
AP = All-Payer
OP = Other Payer
PD = Per Diem
PC = Per Case or Per Discharge
TR = Total Revenue
C = Ceiling on Rates
NC = No Ceiling
UC = Uncompensated Care Allowance
VA = Volume Adjustment
OCC = Minimum Occupancy Requirement

Source: Susan Laudicina, "A Comparative Survey of Medicaid Hospital Reimbursement Systems for Inpatient Services, State-by-State, 1980-1985," Intergovernmental Health Policy Project, George Washington University, December 1985.

prototypical Medicaid reimbursement approaches on each of four dependent variables. The regressions hold constant a number of hospital characteristics. Comparisons of the coefficients on the policy variables provide a measure of the relative strengths of different reimbursement systems.*

In this study, the dependent variables were measured in four ways. Each captured different aspects of reimbursement system effectiveness. The first two variables are the hospital's Medicaid revenues per day and per admission. The revenues per day variable provides a test of whether States pay less per day, in absolute terms, in comparison with other States. The revenue per admission variable tests whether hospitals pay less for each case. The results in the revenue per admission equations will differ from the revenue per day equations if the reimbursement systems have different effects on length of stay or on the intensity of service provided during a stay. Hospitals will receive lower revenues per day, or per admission, if (1) the State reimbursement policy results in the hospital industry's having lower costs, or (2) Medicaid payments are low relative to those costs. These regressions will capture both effects.

*Data were derived from a number of sources. The policy variables were developed from a survey of State systems conducted by the Urban Institute. The results of the survey were published in an Intergovernment Health Policy Project report. Data on hospital revenues and utilization by payer source were available from the Survey of Care to the Poor and Hospital Financial Status conducted jointly by (UI-AHA). Data on hospital characteristics were provided from the AHA annual surveys and from the UI-AHA surveys.

Because the effect of Medicaid policies on the ratio of revenues to costs is of interest in its own right, separate regressions with Medicaid revenues per day, divided by hospital costs per day, as the dependent variable were estimated. Data on Medicaid costs were not available; an assumption based on work by Sloan and Becker (1983) that costs per day do not vary across payers was utilized. These regressions provide a test of whether hospitals receive less revenue relative to their average costs under certain payment arrangements. The final regressions use Medicaid revenues over Medicaid charges, or the Medicaid discount, as the independent variable. Charges reflect market rates, i.e., what the hospital is charging its private patients. Therefore, these regressions will show in which systems Medicaid is more successful in receiving a discount. The discount variable includes Medicaid specific data in both the numerator and denominator; thus, it may be better able to capture effects of Medicaid policies than the revenue/cost variables.

The reimbursement approaches of the 25 States were classified into a set of reimbursement policy variables; these are employed as binary or dummy variables. The hospitals are grouped by the type of reimbursement system in their State. First, retrospective systems are considered as a separate category and are included in the intercept of each of the reported regressions; they serve as a comparison group for all other payment systems. The first analysis group is retrospective systems with rate of increase controls. Next, variables for hospitals in States with Medicaid-only prospective reimbursement systems are included. These are divided into prospective systems with strong efficiency incentives and prospective systems with weak efficiency incentives. Prospective systems with strong efficiency incentives are those where rebasing takes place

at greater intervals than 2 years. Systems which rebase after 2 years or less are considered to provide weak incentives. The California Selective Contracting program in 1984 and the Illinois rate reduction program in 1982 were analyzed separately.*

The key hypotheses were that each of the alternative reimbursement systems would reduce Medicaid payments relative to the retrospective cost based approach. It was expected that hospitals in States with strong efficiency incentives would have lower Medicaid revenues per day and per admission than hospitals in States with weak incentives. The Illinois rate reduction approach and California's Selective Contracting were expected to have strong dampening effects on Medicaid revenues in the years in which they were in effect.

The all payer States are included as separate variables. New York and Massachusetts were combined into one variable and New Jersey and Maryland into another. This was done because a review of the reimbursement systems indicates that, on a prior grounds, New York and Massachusetts contain stronger or more stringent reimbursement systems from the perspective of the Medicaid

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* In 1982, Illinois imposed a dramatic reduction in rates. The State first estimated the expected utilization level for each hospital and then projected forward to 1982 the fiscal 1979 costs per day for each hospital. The State then projected its own spending for total hospital services for the fiscal 1982 period by multiplying each hospital's projected unit cost figure by estimated utilization and adding the costs across hospitals. Comparing this total with available State funds, and finding that the former exceeded the latter, the State cut rates for all hospitals by 14.3 percent. In a major departure from past practices, and from Medicare reimbursement arrangements, the State thus tailored its payments to its own judgment of its ability to pay. Hospitals that reduced utilization would have rate increases to make up its 14.3 percent reduction. In 1983, hospital rates were increased by 10 percent per day, but the State set a cutoff on the number of days it would reimburse for at the 80th percentile of length of stay on a diagnosis specific basis.

program. New York's minimum occupancy rate provisions and its low occupancy ceilings by comparison with other States make it a very tightly constrained system. The approach used in Massachusetts also contains features which are very constraining. These include its productivity factor which results in a fixed percentage reduction in rates below that permitted by inflation. Another feature of the Massachusetts system is an explicit Medicaid discount, which has the effect of reducing Medicaid payments to hospitals. New Jersey and Maryland contain strong cost-containing features by controlling total revenues and limiting rates of increase in hospital rates. Neither, however, contains both the stringent features of the New York and Massachusetts arrangements.

It was hypothesized that the all payer States would reduce Medicaid revenues of hospitals relative to revenues in cost based reimbursement States but not necessarily reduce Medicaid revenues relative to Medicaid costs. This is because all-payer States reduce the rate of growth and level of hospital costs and thereby reduce outlays of third party payers and revenues of hospitals. They do not necessarily reduce revenues from any payer, e.g., Medicaid, relative to hospital costs. Medicaid-only reimbursement systems were expected to have stronger effects on Medicaid revenues relative to costs. It was also hypothesized that the all-payer States would not have uniform effects. For reasons given earlier, New York and Massachusetts seem to have stronger incentives to control costs per day. Maryland and New Jersey contain stronger incentives to reduce lengths of stay; thus, it was expected New Jersey and Maryland would perform better relative to New York-Massachusetts in the revenues per admission than in the revenue per day equations.

In summary, the reimbursement systems are grouped as follows:

(1) Retrospective Cost Based Reimbursement -- systems employing Medicare reimbursement principles

(2) Retrospective Systems with Prospective Rate Increase Controls -- cost based systems limiting the rate of increase in costs

(3) Prospective Systems with Strong Efficiency Incentives -- prospective systems which keep the base year constant for 2 or more years

(4) Prospective Systems with Weak Efficiency Incentives -- prospective systems which update the base year at least every 2 years if not more frequently

(5) Illinois Rate Reduction Year -- the rate reduction imposed in Illinois in fiscal year 1982

(6) California Selective Contracting -- the selective contracting system introduced in California in 1984

(7) The Ratesetting Systems in New York and Massachusetts

(8) The Ratesetting Systems in New Jersey and Maryland

A central issue in reimbursement policy is the unit of payment -- per diem, per admission, or total revenue. The all-payer systems control total revenue in one way or another; the regression results on the all-payer variables incorporate the effects of total revenue caps. Another binary variable is used to capture the impact of per admission policies; the regression coefficients measure their impact relative to per diem systems. Another reimbursement variable used in the analysis was whether or not States used ceiling rates. A variable to represent State use of policies to limit lengths of stay was also employed. States were designated as having such limits, if they had absolute annual limits of 15

days or less or length of stay limits on a diagnosis specific basis. Finally, State use of prior authorization of hospital inpatient care was also a control variable.

In the regressions, a variety of hospital characteristics were held constant. First, the hospital case mix was controlled for using a resource need index developed by the Commission on Professional and Hospital Activities. Also controlled was the hospital patient mix using the share of all inpatient days that are Medicaid days or Medicare days. The share of hospital days that are Medicaid will control the importance of the Medicaid program to the hospital. Hospital wages in the revenue per day and revenue per admission equations were controlled; this controls for areawide differences in input costs. Finally, the regressions control for the hospital's ownership, e.g., nonprofit or public, for the hospital's occupancy rate, and for the hospital's teaching status.

Results

The studies' findings are presented in Table 5. As noted, the regression equations measure the effects of reimbursement policy on the dependent variables, holding constant characteristics of hospitals including case mix, input prices, teaching status, and payer mix. Of particular importance, the regressions hold constant the Medicaid share, reflecting the importance of Medicaid to the hospital. The results indicate that reimbursement policies matter, but that there is considerable variation among different policies and their effects on the outcome variables. All reimbursement systems are compared to the traditional cost based reimbursement States. Thus, a State that has a significantly negative

coefficient will mean that the dependent variable, e.g., the ratio of revenues per day to costs per day, is lower in hospitals under that particular type of reimbursement system than in hospitals in retrospective cost based systems.

Table 5
Multivariate Analysis of Effects of Alternative Medicaid Reimbursement Policies on Hospital Revenues, 1980-1984

Independent Variables	Mean Value	Regression Coefficients (t-statistics in parenthesis) Revenue Per Day	Revenue Per Admission	Revenue Per Day Cost Per Day	Medicaid Discount
Reimbursement Systems					
Retrospective Rate of Increase Controls	0.110	25.59*** (3.78)	48.32 (0.94)	-0.01 (-0.47)	-0.13*** (-7.72)
Prospective with Strong Efficiency Incentives	0.098	-20.37*** (-2.90)	-26.27 (-0.49)	-0.10*** (-4.70)	-0.15*** (-8.52)
Prospective with Weak Efficiency Incentives	0.185	1.65 (0.32)	-7.90 (-0.21)	-0.04** (-2.37)	-0.04*** (-2.93)
Illinois Budget Control	0.035	-4.16 (-0.46)	-32.74 (-0.48)	-0.09*** (-3.19)	-0.13*** (-6.03)
California Selective Contracting	0.017	95.40*** (7.14)	240.39** (2.38)	-0.05 (-1.14)	-0.18*** (-5.48)
All Payers 1 (NJ, MD)	0.061	-17.71** (-2.20)	-145.74** (-2.40)	0.04* (1.94)	0.08*** (4.15)
All Payers 2 (NY, MA)	0.076	-49.54*** (-6.08)	-116.51* (-1.89)	-0.12*** (-4.79)	-0.01 (-0.55)
Mean of Dependent Variable		230*	1478*	0.93	0.76

Number of Cases = 1,952

Source: UI/AHA Survey of Medical Care for the Poor and Hospitals' Financial Status.

a. Binary variables: 1 if hospital has the designated characteristic; 0 otherwise

*** The coefficient is significant at the 1 percent level.
** The coefficient is significant at the 5 percent level.
* The coefficient is significant at the 10 percent level.

The all payer States were first examined. As noted above, all payer States were divided into New Jersey-Maryland and New York-Massachusetts because of the different incentives in those States' payment systems. It should be noted that other research has shown that all payer systems control costs per day and costs per admission below that of other States (for example, Eby and Cohodes (1985) and Zuckerman (1986a)). Medicaid programs may then benefit from all payer regulation because of the dampening effect of ratesetting on hospital costs. Thus, Medicaid revenues may be lower in comparison with other States without reducing revenues per day or per admission below costs per day or costs per admission, or by achieving greater discounts. Accordingly, the revenue per day and the revenue per admission equations are implicitly testing whether all payer States pay less in absolute terms relative to other types of systems.

The results tended to support the view that Medicaid programs benefit substantially from all-payer systems. Revenues per day were significantly lower ($18 per day) in New Jersey and Maryland than in the control States and lower than in all of the Medicaid-only States (except for those with strong efficiency incentives). Revenues per admission were also substantially lower ($146 per admission) than in comparison States as well as any other ratesetting States. New Jersey and Maryland hospitals were higher in terms of the ratio of revenues per day to costs per day than in cost based States. These results suggest that Medicaid payments in these States are not particularly low relative to costs, but are low in absolute terms

relative to other States. This is borne out by the Medicaid discount equation, wherein New Jersey and Maryland have a statistically significant and positive coefficient, meaning that the Medicaid discount was less in these States than even in cost based reimbursement States. This occurs because New Jersey and Maryland pay a higher share of charges than in other States. Charges, however, are controlled by the ratesetting system; therefore, the Medicaid programs pay less in absolute terms but a higher percentage of charges.

New York and Massachusetts were found to have strong effects on revenues per day and revenues per admisison. New York and Massachusetts had lower revenues per day of $50 and lower revenues per admission of almost $117. The revenues per admission are not as highly negative as those observed for New Jersey and Maryland ($146). This indicates that New York and Massachusetts do not encourage reductions in lengths of stay to the extent seen in New Jersey and Maryland. New York and Massachusetts also had revenues per day significantly below costs per day. That is, even in an all payer environment, these States were controlling revenues at levels below cost. In New York and Massachusetts, the ratios of per diem revenues to per diem costs was 12 percent below the same ratio in cost based reimbursement systems. These were the strongest effects observed for any payment systems and reflect the stringent incentives contained in New York and Massachusetts reimbursement systems. New York and Massachusetts hospitals were not statistically significant in the Medicaid discount equation. Again, this reflects the fact that New York and Massachusetts pay generously relative to charges, but low relative to costs. In other words, charges are controlled in the all payer systems more than in other States.

The results on the Medicaid-only systems indicate that most were successful in controlling hospital revenues relative to costs. All types of systems were successful in controlling Medicaid revenues relative to Medicaid charges. They do not appear as successful as the all-payer States in affecting levels of revenues per day and revenues per admission. Only the prospective payment systems with strong efficiency incentives had statistically significant dampening effects on revenues per day. This suggests that payment systems which do not rebase annually and instead adjust rates by the trend factor can be as successful as the all-payer systems in controlling hospital payments on a per diem basis. There were no statistically significant differences between the Medicaid-only prospective payment systems and the traditional cost based retrospective reimbursement arrangement in the revenues per admission equation. The States with prospective payment systems with weak efficiency incentives also had Medicaid discounts of about 4 percent compared with cost based States, again suggesting that these systems are not as stringent as the prospective payment systems with strong efficiency incentives. These results indicate that, in general, Medicaid-only prospective systems reduced hospital Medicaid revenues without affecting the structure of hospitals' costs or charges.

Several of the Medicaid-only prospective payment systems were successful in controlling hospital revenues per day relative to costs per day. Prospective payment systems with strong efficiency incentives had a 10 percent lower ratio of revenues relative to costs, while prospective payment systems with weak incentives had a 4 percent lower ratio. This result suggests that while prospective systems with weak efficiency incentives do control Medicaid payments, they are not as effective as prospective systems with strong

efficiency incentives. This strongly suggests, then, that the frequency with which States rebase does matter in controlling Medicaid rates. The Illinois rate reduction system reduced revenues relative to costs by 9 percent. The California Selective Contracting program, however, did not have a statistically significant reduction in revenues per day relative to costs per day.

All of the Medicaid-only prospective payment systems reduced Medicaid revenues relative to Medicaid charges. The ratio of Medicaid revenues to Medicaid charges will capture effects of payment systems on reductions in number of days as well as revenues per day. The California Selective Contracting program had the strongest reduction in Medicaid revenues relative to Medicaid charges. The ratio was 18 percent lower than in Medicaid cost based systems. Prospective payment systems with strong efficiency incentives had a 15 percent discount relative to cost based States, while the retrospective rate of increase control States had a 13 percent greater Medicaid discount.

As noted earlier, the all-payer systems are not structured to reduce revenues per day relative to costs nor will they necessarily reduce Medicaid revenues relative to Medicaid charges. The all-payer system's objective is to reduce costs for all payers, thus revenues for one payer will not necessarily fall below costs. Despite the fact that all-payer systems attempt to control costs faced by all-payers, New York and Massachusetts all-payer systems reduced revenues relative to costs by 12 percent, a stronger impact than in any of the Medicaid-only prospective payment systems. Similarly, revenues relative to charges should not vary across payers in all-payer States because charges are controlled. The Medicaid discount was not significantly different in New York and Massachusetts

(1 percent) from the traditional cost based reimbursement sytems and was significantly less in New Jersey and Maryland (8 percent). This is not surprising given the structure of the all-payer systems.

The second study used Medicaid expenditure data to analyze the effects of different Medicaid-only ratesetting approaches on reducing the rate of growth of Medicaid hospital expenditures. The objective was to distinguish between all-payer and Medicaid-only systems in their effects on Medicaid outlays. Another objective was to test (1) whether Medicaid-only systems had effects which lasted beyond a one-time initial impact, and (2) whether different kinds of reimbursement systems had their effects through reducing the number of recipients, e.g., a proxy for admissions or expenditures per recipient. In this study, in contrast with the former, the issue was examined from the perspective of State outlays rather than hospital revenues. The primary data source used in this study was data reported to the Federal Government by the States through the HCFA 2082 reporting form. States are required to submit information on Medicaid expenditures as well as unduplicated counts of recipients by eligibility status and type of service. The study used 8 years of Medicaid expenditures data, 1977 through 1984. The analysis excluded aged Medicaid patients because virtually all of these patients are also Medicare eligible; thus, their inpatient hospital utilization and payments will be affected by Medicare rather than State policy decisions.

Three dependent variables were used to measure the relative effectiveness of Medicaid hospital policies and program outcomes:

(1) annual percent change in real inpatient hospital expenditures;

(2) annual percent change in inpatient hospital recipients; and

(3) annual percent change in real inpatient hospital spending per recipient.

The spending per recipient variable is particularly useful in evaluating rate-setting systems because it captures the effects of both rates per day and lengths of stay differences. Because ratesetting can reduce expenditures through its effect on admissions and, therefore, the number of recipients of hospitals care, it is also useful to analyze changes in the number of recipients.

The study used multivariate regression techniques to analyze the reimbursement policies. The study controlled for a number of other variables. Reimbursement policy is not the only attempt by States to control hospital spending; States employed a wide variety of controls to attempt to limit both hospital admissions and lengths of stay, e.g., prior authorization, limits on hospital stays. Regression techniques were used to control for other policy initiatives and thereby isolate the effect of reimbursement policies. Regression techniques also controlled for changes in Medicaid eligibility that may have occurred during the study period. This is particularly important because of the major eligibility changes associated with the 1981 Omnibus Budget Reconciliation legislation, i.e., provisions aimed at limiting Aide to Families of Dependent Children (AFDC) eligibility for families with earned income. Finally, changes in Medicaid hospital payments could be caused by general trends affecting the hospital sector, such trends can also be controlled for through regression techniques.

As in the previously reported study, this study used information on State reimbursement systems to develop a set of independent variables. No attempt

was made to classify States by the various features of their reimbursement systems; rather States were classified according to whether they controlled only Medicaid rates, Medicaid plus some other payers' rates, or rates paid by all third-party payers. The study also focused on the length of time Medicaid-only rate-setting systems had been in place.

Medicaid policies are measured by a series of binary variables equal to 1 if the State had a certain hospital policy in place in a given year; 0 otherwise. If the policy is implemented any time during the year, that year is identified as the year in which the policy was in effect. As a result, in most instances year 1 of a policy is in fact a partial year, and year 2 is regarded as the first full year of implementation. The results below will demonstrate that the length of time the policies were in effect was found to be important.

The results of this regression analysis are shown in Table 6. The results indicate that the waiver States had statistically significant reductions in hospital spending. On average, the waiver States reduced the growth in hospital spending by 6.1 percent annually. Analysis of Medicaid-only ratesetting systems showed that these systems had strong effects in the first full year of implementation. The estimated effect was a 7.6 percent reduction in the rate of growth of real Medicaid hospital spending; however, the growth in hospital spending was not found to be significantly lower in years beyond the first full year of implementation. The implication, therefore, is that Medicaid-only systems have a strong effect in their first full year but then return to the same growth rate that they were experiencing prior to the implementation of the Medicaid-only system. Waiver States were all observed in years beyond the third year of

Table 6
Regression Analyses of Rate of Change in Real Medicaid Hospital Spending--1977-1984
(n=350) absolute t-values are in parentheses

Independent Variable	Mean of Independent Variable	(1) Hospital Spending	(1) Recipients	(1) Spending per Recipient	(2) Hospital Spending	(2) Recipients	(2) Spending per Recipient
All-payer States[a]	.080				-.061** (2.20)	-.010 (0.44)	-.059** (2.31)
New York-Massachusetts	.040	-.116*** (3.01)	-.018 (0.57)	-.102*** (2.89)			
New Jersey-Maryland	.040	-.010 (0.27)	-.003 (0.10)	-.019 (0.54)			
Other multipayer rate-setting	.049	-.043 (1.21)	-.026 (0.89)	.024 (0.75)	-.051 (1.36)	-.030 (0.97)	-.028 (0.81)
Medicaid-only ratesetting							
Year 1	.077	-.002 (0.06)	.005 (0.21)	-.014 (0.53)	-.002 (0.08)	.005 (0.23)	-.015 (0.56)
Year 2	.069	-.076** (2.47)	-.042* (1.68)	-.039 (1.39)	-.076 (2.47)	-.042 (1.67)	-.039 (1.38)
Beyond Year 2	.074	-.006 (0.18)	-.002 (0.08)	-.003 (0.11)	-.005 (0.17)	-.001 (0.05)	-.003 (0.11)
Any day limits	.526	-.013 (0.82)	-.010 (0.77)	-.004 (0.26)	-.009 (0.57)	-.010 (0.76)	-.0004 (0.03)
Prior authorization--nonemergency admission	.100	.005 (0.21)	.006 (0.31)	-.005 (0.21)	.009 (0.35)	.005 (0.27)	-.002 (0.087)
Prior authorization--specific services	.414	-.039** (2.39)	-.027** (1.98)	-.001 (0.08)	-.032** (2.01)	-.026** (2.01)	.005 (0.31)
Percent change in total Medicaid recipients	.015	.186*** (2.72)	.474 (8.46)	-.308*** (4.90)	.192*** (2.80)	.476*** (8.50)	-.303*** (4.82)
Mean of dependent variable		.032	.006	.031	.032	.006	.031

[a] Waiver and nonwaiver years. *The coefficient is significantly different from zero at the 1 percent level.
** The coefficient is significantly different from zero at the 5 percent level
*** The coefficient is significantly different from zero at the 10 percent level.

implementation; thus, the lower growth rates observed could be regarded as permanent effects.

The all-payer States were classified into New York/Massachusetts and New Jersey/Maryland because of prior expectations about the relative stringency of the four States. The regressions showed that New York and Massachusetts had strong dampening effects on the growth of hospital spending relative to States with cost based reimbursement; real hospital expenditures growth was 12 percent lower in New York and Massachusetts. On the other hand, New Jersey and Maryland did not have significantly different rates of growth in real Medicaid hospital spending from States that applied Medicare cost principles. States in which Medicaid was combined with some other payer in the ratesetting system also did not have significant rates of growth in hospital spending.

The effects of different reimbursement systems on recipients and spending per recipient were examined. The findings indicated that the lower rates of growth in hospital spending in New York and Massachusetts were almost completely due to strong effects on reducing the growth of spending per recipient. The growth of spending per recipient was more than 10 percent lower in these two States than in States without any form of prospective payment. Growth in the number of recipients in all-payer States was not significantly different from in States with cost based reimbursement. Again, New Jersey and Maryland did not have significant differences in either the recipient or spending per recipient equation. Similarly, States with multipayer ratesetting systems also did not have significantly different effects.

Analysis of the Medicaid-only ratesetting sytems showed that the reduction in hospital spending in these States was due to a combination of reduction in the growth of recipients and in the growth of spending per recipient. The growth of recipients was about 4 percent lower in the first full year of implementation; increases in spending per recipient were also lower by about 4 percent, although this finding was not significantly different. The growth in spending per recipient was not lower in years beyond the first full year of implementation. Therefore, the first year results seem to indicate that at least half of of the reduced growth in hospital spending in Medicaid-only States was due to a reduction in the growth of recipients. It appears that States may have been concerned that rate reductions might have been leading to reductions in access for Medicaid recipients. Thus, after the first full year of implementation in which States successfully achieved a sharp reduction in the growth of hospital spending, these States seem to have been reluctant to continue with sharp controls on hospital rates. As a result, after the first full year of implementation, neither the growth in spending per recipient, nor in the growth in recipients, was significantly different than in States with cost based reimbursement.

It must be remembered, however, that these results strongly suggest that Medicaid-only systems have a very significant one-time impact on the growth rate. While the reduction in the growth rate is not permanent, States do not appear to return to the previous levels of spending. In contrast, however, the reduction in the growth rate in the waiver States of New York and Massachusetts does seem to be permanent. There does not appear to be an increase in the relative growth rate after the first year, thus the reduction rate in hospital spending seems to be permanent at least over the period studied. This is

consistent with other evidence on the effects of hospital ratesetting on hospital costs. The effect on hospital spending appears to be more permanent because the ratesetting systems reduce the growth in hospital costs for all payers.

Summary

The findings provide evidence that Medicaid programs generally paid less for hospital inpatient care in all-payer States than under Medicaid-only prospective payment systems as well as under traditional cost based arrangements. Each of the all-payer States was successful in reducing hospital revenues per admission. New York and Massachusetts hospitals had lower revenues per day as well. The success of the State all-payer systems in lowering Medicaid payments is in part attributable to the effects of these reimbursement policies on hospital costs in those States. In New York and Massachusetts, the ratesetting systems also resulted in low Medicaid payments relative to hospital costs.

The study also produced evidence that some types of Medicaid-only systems were very successful in controlling revenues relative to costs. On the other hand, all types of Medicaid-only prospective systems were successful in reducing Medicaid revenues relative to Medicaid charges; however only those with strong efficiency incentives were as successful as the all-payer States in controlling the absolute level of per diem payments to hospitals. This suggests that, in general, Medicaid-only systems reduced Medicaid payments without affecting the structure of the hospitals' costs or charges.

The study also found that the growth in Medicaid inpatient revenues was less in the all-payer States than in the Medicaid-only States. The all-payer States were

found to have successfully lowered the rate of growth in Medicaid hospital revenues; most of the effect, however, was attributable to New York and Massachusetts. The Medicaid-only systems had a substantial one-time reduction in growth in spending in the first full year of implementation. Thereafter, Medicaid-only systems did not have significantly different growth rates than did cost based reimbursement systems.

Medicaid-only systems seem more likely to affect the number of recipients of hospital inpatient care. The all-payer systems appear to have controlled Medicaid revenues by reducing the growth in expenditures per recipient. Medicaid-only systems appear to affect both recipients and expenditures per recipient. This apparent effect on recipients may explain State reluctance to impose strong controls on Medicaid payments beyond the first year of implementation. Because the all-payer systems achieve savings by containing the growth in hospital costs, hospitals have no incentive to discriminate against any one class of patient.

IV. COMMERCIAL INSURERS

Commercial insurers have contended that hospital regulations that control the rates paid by all payers reduce the extent of hospital cost shifting and allow for more effective competition with Blue Cross plans in the market for private health insurance. These perceptions rest on the supposition that when hospitals want or need to generate more revenue in response to either low payments by public payers, Blue Cross discounts, the provision of charity care, or bad debt, they can do so by raising their charges, which form the basis for payments by commercial insurers, i.e., they "cost shift." The fact that commercial payers pay higher rates than other payers is well documented and is often cited as prima facie evidence that cost shifting occurs, Meyer (1983).

Cost shifting has been viewed, by several authors, as a side effect of lower payment by certain payers for hospital services. How this payment is measured and what hospitals do in response to it are areas where cost shifting studies diverge. Johnson, Madson, and Aquilina (1984) believe underpayment results from certain payers not paying in full the prices a hospital charges. This, they suggest, causes the hospital to raise all of its charges which, in effect, raises charges to other payers. Meyer (1983) contends that cost shifting "occurs when hospitals charge some patients more for the same service than others, i.e., private patients more than public patients. However, Cohodes (1984) points out that use of the word "charges" to define cost shifting confuses rather than clarifies, since charges do not necessarily reflect costs. Cohodes implies that hospital "charges" (prices) might diverge from costs to a great degree due to decisions by administrators, trustees, and physicians.

Cohodes views the phenomenon as one in which hospitals "modify their pricing structure to generate enough revenues to meet their own objectives." These objectives allow the hospital to cover its basic costs, bad debts, charity care, and discounts (contractual disallowances), and still produce some margin. Cohodes goes on to say that even if all payers paid full costs, hospital decisions regarding allocating charity care could still result in considerable cost shifting.

The Health Insurance Association of America (HIAA), the commercial insurers' trade association, has suggested that controlling charges in a ratesetting system would effectively curtail the degree of cost shifting (HIAA, 1982). However, recent analyses by Hadley and Feder (1984, 1985) and Zuckerman (1986) show that between 1980 and 1982 hospitals' ability to cost shift was limited. Zuckerman also found no evidence to support the belief that all-payer ratesetting significantly altered this situation.

The implementation of PPS created additional concerns about potential cost shifting. If PPS rates were set below the previous level of Medicare payment, then the new payment system could introduce new financial pressures on hospitals. These new pressures could lead to an environment in which cost shifting, though not widespread in the years immediately preceding PPS, might occur. However, if PPS does not impose severe restrictions on Medicare payments or if hospitals' ability or need to cost shift is no greater under PPS than it was before, commercial payers are not likely to be adversely affected by Medicare's new payment approach. While increased cost shifting might lead HIAA to call for expansion of all-payer types of hospital regulation, evidence that PPS has not dramatically altered the extent of cost shifting would certainly

make the arguments for such regulatory solutions less compelling.

The Report to Congress, The Relationship of Medicare PPS to All-Payer Systems and Cost Shifting (1987), primarily examined cost shifting in the pre-PPS period of 1980-1982. The study found little evidence of widespread cost shifting during this period. The cost shifting analysis in the report is based on a study of AHA survey data from a sample of hospitals. It compares their apparent "need" to cost shift with actual changes in hospitals' mark-ups to commercially insured patients in seven regulated States (Connecticut, Maryland, Massachusetts, New Jersey, New York, Washington and Wisconsin) versus those in nonregulated States in 1980 versus 1982. "Need to cost shift" is an index based upon each hospital's: (1) uncompensated care; (2) margins from treatment of Medicare, Medicaid, and Blue Cross inpatients; and (3) nonpatient revenues. The index is a rough measure of how much cost a hospital would have to shift to commercially insured patient charges to eliminate a shortfall in hospital revenues.

The report found that between 1980 and 1982, sample hospital margins declined from 3.0 percent to 2.0 percent in the regulated States, but rose slightly, from 5.5 percent to 5.7 percent, in nonregulated States. However, the report found little evidence of widespread cost shifting to commercial payers in this pre-PPS period. Unregulated hospitals were found no more likely to exhibit an increased need to cost shift than regulated hospitals. Among the hospitals in regulated States showing increased need to cost shift, admissions grew by 3.5 percent compared to 0.8 percent in comparable nonregulated hospitals, and outpatient revenues were increased from 0.3 percent to 3.2 percent of total revenue.

Nonpatient care revenues declined similarly in regulated and nonregulated States among hospitals with increased "needs" to cost shift.

The point is made that "needs to cost shift can and do arise for reasons other than shortfalls in the rates paid by public payers"; the primary reason identified by HIAA. Although the study confirmed a belief that hospital markups of charges over costs increase at a significantly lower rate in States where commercial payments for hospital care are regulated, all-payer systems were not superior to selective systems on the basis of either greater cost containment or lower amounts of cost shifting. The report also provided further data showing that, from 1980 to 1985, Medicare's share of total hospital revenues continued to grow, and is an unlikely "cause" for cost shifting behavior.

The report concluded that hospitals use a variety of means to increase net revenues and do not necessarily practice "cost shifting" of the kind alleged by commercial insurance spokespersons. Alternative means used to enhance revenues include increasing admissions, increasing outpatient services, otherwise increasing net revenues, and changing nonpatient care revenues.
In this section, the following set of questions is addressed:

- Were commercial payers' rates altered by hospitals' need to cost shift in the period 1982 to 1984?
- Did hospitals in the four all-payer States--Maryland, Massachusetts, New Jersey, and New York--behave differently from other hospitals with respect to cost shifting?
- Did PPS waivers have any other effects on commercial payers?

- Did commercial payers seem better able to compete with the Blue Cross plans as a result of the all-payer States' waivers?

The answers to these questions will help in evaluating the impact of the State systems on private health insurance premiums and tax expenditures. While these issues will have to be considered somewhat indirectly, we feel that the conclusion to this chapter offers the best opportunity to address these analytically difficult areas.

The study presented here extends the previous work by Zuckerman along two important dimensions. First, it employs data through hospitals' 1984 fiscal year, the first year of PPS. With these data, it can be determined if this new Medicare payment methodology has altered hospitals' need to cost shift or their ability to do so relative to facilities in States with all-payer regulation. Second, the study directly explores the impact of the all-payer approach on the rates paid by commercial insurers relative to Blue Cross. This will provide a clearer test of the claim that commercial insurers are better able to compete with Blue Cross plans in regulated environments covering all payers. Abstracting from administrative cost differences, the closer commercial rates are to the Blue Cross rates, the greater probability that commercial premiums could be competitive with those offered by Blue Cross.

Data and Methods

The data used in this chapter were drawn from UI/AHA Survey of Medical Care for the Poor and Hospitals' Financial Status. The survey instrument was fielded

for fiscal years 1980, 1982, and 1984. The original survey instrument was sent to all short term non-federal hospitals of 100 or more beds plus a random sample of approximately 450 smaller hospitals. The 1984 data base was only fielded to those hospitals responding to the 1980 or 1982 surveys. Throughout this analysis, only short term general hospitals were considered. To be certain that all expenses and revenues reported were for hospital services, only facilities without separate long term care units are included. Hospitals were asked to provide information on inpatient days, gross patient care revenues (charges), and net patient care revenues (collections) by primary source of payment and place of service (e.g., inpatient and outpatient), nonpatient care revenues, deductions from charges for charity and bad debt, and total costs, broken down into inpatient, outpatient, and all other operating and nonoperating costs. All data were self-reported by the hospitals.

The analysis file for this study contains only those hospitals reporting reasonable, internally consistent data on the breakdown of inpatient days, admissions, and revenues by payer in both 1980 and 1982 (i.e., the sum across payers had to be within 5 percent of the total value reported). Not enough proprietary hospitals met these criteria to allow for their inclusion in this section. Public hospitals were also excluded from the cost shifting section, since their pricing objectives and access to general tax revenues may differ substantially from private hospitals. The final cost shifting file included 140 private, not-for-profit, short-term general hospitals, approximately 5 percent of the relevant universe. This relatively small sample of hospitals reduced the ability to detect significant differences and raises questions about the representativeness of the study hospitals.

The final sample was compared to the universe of not-for-profit short-term general hospitals along a number of key dimensions to explicitly consider differences in basic characteristics. As shown in Table 7, the hospitals in this file were similar to the universe of private, not-for-profit, short-term general hospitals with respect to the proportions of care provided to Medicare and Medicaid, but differed along a number of other dimensions. The hospitals in the analysis were larger, less rural, and more likely to be located in the Northeast and North Central regions of the country. By being skewed toward the Northeast, the sample contains a disproportionate share of waiver hospitals. This actually aids the analysis by increasing the chances of detecting significant findings with respect to waiver impacts, but highlights the importance of multivariate techniques that allow for control of differences in basic hospital characteristics. Due to the size of the sample, there are some limitations in the analysis described below. For example, it was impossible to examine hospital performance on a State-by-State basis with any reasonable degree of statistical confidence.

Both tabular and multivariate statistical analyses are used to address the study questions. In hospitals' fiscal year 1984, Medicare employed both PPS and TEFRA payment methodologies to determine rates for hospitals not covered by a State waiver. Since PPS and TEFRA contained different financial incentives that could relate to hospitals' need to cost shift, all comparisons between waiver and nonwaiver facilities control for differences between these two major alternative Medicare payment approaches.

Table 7
Selected Characteristics of Analysis and Universe Hospitals, 1984

Hospital Characteristics	Analysis Hospitals (N = 140)	Universe Hospitals (N = 3226)
Distribution by Type of Regulation (%)		
Waiver	22.1	13.2
Nonwaiver (PPS and TEFRA)	77.9	86.8
Distribution by Region (%)		
Northeast	31.4	22.2
North Central	40.7	34.8
South	22.1	25.9
West	5.7	17.0
Distribution by Size of Community (%)		
Population over 1,000,000	32.1	27.7
Population under 1,000,000	50.0	32.2
Nonmetropolitan Area	17.9	40.1
Distribution by Teaching Status		
COTH	14.3	8.0
Minor (Residency Program or Medical Affiliation)	20.7	13.7
Nonteaching	65.0	78.3
Average Number of Beds	327	217
Average Occupancy Rate (%)	72.7	64.3
Medicare Days (%)	45.9	45.5
Medicaid Days (%)	9.8	10.8

Source: Analysis file was drawn from the UI/AHA Survey of Medical Care for the Poor and Hospitals' Financial Status. The data for the Universe Hospitals are from the AHA Annual Survey.

The key outcome variables in this section are the percentage markup to commercially insured patients and the commercial markup relative to Blue Cross. The first variable is defined as the ratio of average revenue per commercially insured patient day to the hospital's overall average cost per day. This provides a measure of commercial payers' rates relative to hospital costs and is useful in that it conveys a sense of how far actual commercial payments are above what might be thought of as a break-even level for the hospital. Overall average costs are appropriate as the denominator since Sloan and Becker (1983) have shown that average costs per day do not vary with payer mix across hospitals. The second outcome variable is simply the ratio of commercial payments per day to Blue Cross payments per day. Per diem revenue and cost measures are used in both variables instead of per case measures to avoid potentially confounding influences associated with differences in length of stay across payers.

In order to measure the extent of cost shifting, i.e., the responsiveness of charges to hospitals' financial need, an explanatory variable that measures hospitals' revenue needs is required. Without knowing the level of revenue requirements, it is impossible to know if commercial markups are adjusting in direct relationship to need. While many analysts view the Medicare, Medicaid, and Blue Cross payment rates as the prime motivators of cost shifting, we believe that the index developed by Hadley and Feder (1984) is a better measure of hospitals' true need to cost shift. The formula for the index is

$$\text{Index} = \frac{(\text{financial need per commercial day} + 1)}{\text{average cost per day}} * 100$$

Financial need per commercial day is defined below. This index not only includes measures of revenue shortfalls (including charity care and bad debt), but also takes into account the average cost per inpatient day and the number of days care provided to commercially insured patients. The latter variable is particularly important. For two hospitals with identical costs and revenue shortfalls, the hospital with fewer commercial days would have to shift costs to a greater extent than the hospital with more commercial days.

If the hospital breaks even on the sum of its care to noncommercially insured patients and all other activities, then its financial need is 0 and the index value is 100. This implies that the revenues the hospital has to raise from commercially insured patients should be about equal to the costs of their care and, therefore, the percentage markup should be about 0. If the need to cost shift is high, then the index will be greater than 100. For example, a value of 125 would imply an expected percentage markup of revenues above costs of about 25 percent. Conversely, if the hospital had a surplus from its care to noncommercially insured patients and other activities, then the index would have a value less than 100. (A surplus is measured as negative financial need.) In effect, the index can be interpreted as a measure of hospitals' target percentage markup of revenues above costs per commercially insured patient day. It should be emphasized, however, that the index is not a precise pricing formula, but rather a means of identifying hospitals with apparently different needs to cost shift. Since the index is a new development in the cost shifting literature, we will review it in some detail here.

To compute the index to need to cost shift, Hadley and Feder first determine hospitals' revenue needs. These needs are assumed to be the sum of three components:

(1) the costs of uncompensated care (charity and bad debt);

(2) the difference between costs and revenues for the treatment of inpatients covered by Medicare, Medicaid, and Blue Cross; and

(3) the difference between nonpatient care expenses and revenues.

Item 2 was computed separately for each payer. Inpatient costs by payer were estimated by multiplying each payer's inpatient days by average cost per day for all patients, again using the assumption that costs per day are approximately the same across payers. The sum of costs minus revenues across these three payers is an estimate of how much the hospital performed by providing care to noncommercially insured inpatients.

The nonpatient care component of the index is included by Hadley and Feder for two basic reasons. First, some hospitals receive philanthropic or government grants specifically to offset the costs of charity care. The greater these grants (or any other nonpatient care surplus), the lower the need to cost shift would be. Second, any nonpatient care activities that a hospital wishes to finance (research, education, community service, or nonhospital enterprises) could be funded out of commercial revenues or surpluses from other payers and, therefore, reduce the need to increase markups. In fact, any nonpatient care account surpluses would strengthen a hospital's financial position and would reduce the need to cost shift.

One factor explicitly omitted from this index is the hospital's target financial margin. Hospitals may attempt to finance future construction with internal funds and set high margin targets. Alternatively, hospitals with large reserves could accept lower margins in periods of economic downturn or when subject to rate regulation. While margin targets are possible, the survey data do not provide a reliable method of identifying these targets. Hadley and Feder made several assumptions about possible margin targets, but found their omission from the index did not alter any of their substantive conclusions. In effect, the index without margin targets measures the need to cost shift in order for the hospital to break even.

Since hospitals differ with regard to the number of days of care provided to commercially insured patients, Hadley and Feder express the revenue needs on a per commercial day basis. Thus, the resulting index simultaneously takes account of how much revenue a hospital might estimate it needs to raise from commercially insured patients and the number of such patients from whom to raise those extra funds. To convert the index into the same units as the percentage markup, Hadley and Feder divided each hospital's financial need per commercial day by the hospital's average cost per day, added 1.0 and multiplied by 100.

Although tabular analyses will provide a sense of differences in commercial markups and relative markups for hospitals in differing reimbursement systems, it will be difficult to separate out the effects of the waivers from the index of need to cost shift without developing a multivariate model for the outcome variables. Let us assume that there is some "desired" markup (M^*_{84}) that

hospitals would like to charge patients of commercial payers in 1984. This markup is established on the basis of the 1982 value of the index of the hospital's need to cost shift (N_{82}), whether or not the hospital is in a State with a PPS waiver (WV), whether or not the hospital is covered by TEFRA, and a set of exogenous variables measuring hospital characteristics, the demand for services, and other area attributes (X). We will also attempt to determine if the waiver systems alter hospitals' responses to their need to cost shift. Hospitals were not, in all likelihood, able to move to this desired markup in the period from 1982 to 1984, due either to some lag in this adjustment or to limits imposed by demand factors. As a result, a partial adjustment model that says the actual change, $M_{84}-M_{82}$, in markups will only be a fraction of the desired change, $M^*_{84}-M_{82}$, seems appropriate.

The desired markup is never observed. However, since we do observe the determinants of the desired markup, we can derive a linear regression model for the actual 1984 markup based on these determinants and the actual level of the markup in 1982.* If cost shifting is a widespread, though not completely compensatory response to financial need, we would expect the 1982 index of need to be positively related to the 1984 markup. Regulation, on the other hand, would be expected to reduce the 1984 markup. If the all-payer hypothesis put forward by HIAA is true, then hospitals' responsiveness to need will be lower when commercial rates are controlled, i.e., an interaction term between N_{82} and WV would enter a regression for the 1982 markup with a negative sign.

The 1982 value of the index is used for two basic reasons. First, it seems reasonable to believe that a hospital will set its 1984 commercial revenue or markup targets based on the most complete financial data it has at the start of 1984. The most complete data it has at the start of 1984 would be, at best, from 1983. Due to the fact that financial data tend to be compiled with a long lag, the hospital may still be using a great deal of 1982 data when making 1984 decisions. Not having 1983 data could weaken the relationship between the index and the markup, but its omission is not necessarily crucial. Second, if the 1984 value of the index is used which is the only other value available, we would have to treat the variable endogenously. An attempt to do this was made. However, because of the difficulties encountered in estimating an instrument for the 1984 index and the reality of a lag in availability of financial data for hospital planning, the specification shown was chosen.

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* Algebraically, we can write this model in the following manner. Let

(1) $M^*_{84} = a + b_1 N_{82} + b_2 WV + b_3 TEFRA + b_4 X$

where a, b_1, b_2, b_3, b_4 are parameters to be estimated and the remaining variables are defined as in the text. According to the partial-adjustment framework, we posit that

(2) $M_{84} - M_{82} = p (M^*_{84} - M_{82})$ where $0 < p \leq 1$.

M_{82} and M_{84} are the actual markups paid by commercial payers in 1980 and 1982, respectively. Since M^*_{84} is never observed, it is necessary to substitute equation (1) into equation (2) to derive an expression for M_{84} that is only a function of observed variables. We arrive at

(3) $M_{84} - M_{82} = p (a + b_1 N_{82} + b_2 WV + b_3 TEFRA + b_4 X - M_{82})$ or

(4) $M_{84} = (1-p) M_{82} + pa + pb_1 N_{82} + pb_2 WV + pb_3 TEFRA + pb_4 X.$

Based on the discussion in the text, a regression based on equation (4) would have $pb_1 > 0$ if cost shifting occurs and $pb_2 < 0$ if the waivers are successful in containing rates. There is no priori reason to predict a sign for the coefficient of the TEFRA variable.

Table 8
Percentage Markups by Payer, Index of Need to Cost Shift and Percentage Total Margins by Type of Medicare Hospital Reimbursement System

	PPS			TEFRA			WAIVER		
	1982	1984	Change	1982	1984	Change	1982	1984	Change
Commercial Insurance	129.5	131.9	+2.3	125.0	130.4	+5.4	131.4	130.0	-1.8
Medicare	100.9	109.2	+8.3	100.9	97.2	-3.6	101.5	97.7	-3.8[a]
Medicaid	91.1	85.0	-6.1	94.7	104.8	+10.1	100.7	95.6	-5.1
Blue Cross	121.3	118.2	-3.1	113.5	127.1	+13.5	109.4	101.7	-7.7[b]
Commercial Markup Relative to Blue Cross	108.4	121.3	+12.9	111.9	115.3	+3.4	122.0	134.7	+12.7
Index of Need to Cost Shift	98.4	93.8	-4.6	97.5	116.9	+19.4	105.3	140.6	+35.3
Total Margin (% of Total Revenue)	7.0	8.9	+1.9	5.9	6.7	+0.8	2.2	1.7	-0.5
Number of Hospitals		63			46			31	

a. Significantly different from PPS at the 95 percent level of confidence.
b. Significantly different from TEFRA at the 95 percent level of confidence.

Results

Table 8 presents the univariate analysis of markups and need to cost shift by type of Medicare hospital reimbursement system. While the univariate comparisons are less conclusive than multivariate regressions in the sense that they do not control for potentially confounding factors, this table is included to provide a basic picture of how the levels of markups for different payers and the need to cost shift varied across time and by Medicare hospital reimbursement systems. The data show that in each year commercial insurers paid the highest average markups followed, in descending order, by Blue Cross, Medicare, and Medicaid. This result holds over time for each class of reimbursement system identified. The average change in commercial and Medicaid markups from 1982-1984 was not significantly different across PPS, TEFRA and waiver hospitals. However, significant differences were observed in markup changes for Medicare and Blue Cross. We find that, on a per diem basis, Medicare payments relative to costs are rising by 8.3 percent under PPS while falling by 3.8 percent under the waivers. In all likelihood, this is due to the incentives to reduce lengths of stay under PPS that result in increases in Medicare revenues per day even when per case PPS rates are set so as to be budget neutral. Finally, while the best available point estimates of the change in the average need to cost shift (those shown in the table) suggest rather dramatic increases in the waiver hospitals relative to PPS, the differences cannot be accepted as different from zero at standard levels of statistical confidence. The reason for this is the high degree of variability in the index of need to cost shift, especially among hospitals in the waiver States.

The other significant finding in Table 8 relates to the Blue Cross markup. Blue Cross markups fell by 7.7 percent in the waiver hospitals as compared to a 13.5 percent increase in TEFRA facilities (the waiver/PPS difference is not significant). Data on the change in relative markups could lend support to the notion that the waivers hurt the competitive position of the commercial insurers relative to Blue Cross. However, the differences in the change in the relative

markup are not significant. In fact, this conclusion would be counter-intuitive in light of the equity considerations in all-payer systems and is, in all likelihood, due to the fact that this tabular analysis is confounded by intervening factors that must be controlled for with multivariate techniques.

Within the PPS group, the index of need to cost shift does show that PPS hospitals have not experienced an increased need to raise commercial markups. This is also supported by the fact that percentage total margins rose in hospitals paid via PPS. However, because the reduction in the index or the increase in the margins among PPS facilities is not significant at conventional levels of confidence, they can only be viewed as indications that PPS is not creating serious financial hardships for hospitals.

Turning to the multivariate analyses (Table 9), we are immediately drawn to different conclusions about the impact of the waivers on commercial markups and relative markups than were suggested by the data in Table 8. Using the partial adjustment framework with the independent variables shown, we find that commercial markups were 30.8 percent lower in waiver hospitals than in PPS hospitals during 1984. A similar comparison of relative markups shows that, relative to Blue Cross, 1984 commercial rates were 34.5 percent lower under the waivers than under PPS. The data show, then, that this aspect of the legislated intent of the State systems has been realized. No significant differences were detected between PPS and TEFRA. The PPS/waiver differential is particularly revealing in light of the fact that both the prior year's value of the dependent variable and the index of need to cost shift are being held constant across hospitals by the regression. This result did not change when an alternative

Table 9
Multivariate Analyses of Commercial Markups and
Commercial Markups Relative to Blue Cross, 1984
n = 140

(absolute value of t-statistics in parentheses)

Independent Variables	Mean Value	Commercial Markup	Commercial Markup Relative To Blue Cross
Waiver Hospital[a]	0.22	-0.308[b] (1.99)	-0.345[c] (1.69)
TEFRA Hospital[a]	0.33	-0.074 (0.78)	-0.156 (1.25)
Commercial Markup, 1982	1.28	0.089 (0.63)	--
Commercial Markup Relative to Blue Cross, 1982	1.13	--	0.062 (0.30)
Index of Need to Cost Shift, 1982	1.00	-0.11 (1.48)	-0.020 (0.21)
Share of Total Days Paid by Commercial Insurers, 1982	0.21	-1.342[b] (2.44)	-1.998[b] (2.66)
Beds	326	0.0002 (0.76)	0.0007 (1.63)
Teaching (COTH member, residency program, or medical school affiliation)[a]	0.37	-0.93 (0.92)	-0.110 (0.82)
Northeast[a]	0.31	0.116 (0.56)	0.238 (0.87)
North Central[a]	0.41	-0.022 (0.13)	0.010 (0.05)
South[a]	0.22	0.043 (0.24)	0.009 (0.04)

a. Binary variable equal to one if the hospital has the indicated characteristic; zero otherwise.
b. Significantly different from zero at the 95 percent level of confidence.
c. Significantly different from zero at the 90 percent level of confidence.

specification using the hospitals' 1982 percent total margin as a measure of financial need instead of the index was estimated (this regression is not reported in the table). This analysis shows that commercial payers were significantly better off under the waivers than under PPS in 1984, with respect to their payments both relative to hospital costs and relative to Blue Cross' rates. These results show that hospitals with the same commercial markups and need to cost shift in 1982 behave differently in 1984 under the waivers than they do under PPS with respect to commercial insurers. Whether or not this is the waiver hospitals' intent, it clearly is the outcome in the presence of the regulatory process.

It does not appear, however, that the markup differences are the result of reductions in the degree of cost shifting caused by the waivers. Nationally, we found no evidence to support the hypothesis that commercial markups are a function of hospitals' need to cost shift. As part of this study, we estimated a model in which the impact of the index was allowed to vary by type of Medicare payment system. This was accomplished by estimating a regression that included interaction terms involving the index and the waiver variable and the index and the TEFRA variable in addition to the other variables shown in Table 9. We have not explicitly reported the results of this model since there was no indication that hospitals responded differently to their needs to cost shift under the waivers than under PPS or TEFRA, i.e., the interaction terms were not significantly different from zero and none of the other results changed. These findings are consistent with studies by Hadley and Feder (1985) and Zuckerman (1986) that covered hospitals' responses for the period 1980 to 1982. Since cost shifting is not apparent in commercial markup data through 1984, one can conclude that

PPS does not appear to have changed the underlying process through which commercial markups were determined.

Why are the multivariate results (Table 9) so different from those derived from the univariate analysis (Table 8)? The answer to this question appears to center on one of the explanatory variables used in the regressions--the share of total days paid by commercial payers in 1982. Zuckerman (1986) found that the limited amount of cost shifting evident in 1982 commercial markups was inversely related to the 1980 commercial share of days. That study argued that hospitals were more likely to use commercial insurers as a safety valve to satisfy revenue needs when these payers possess relatively little market power. While a similar result in the 1984 data base could not be confirmed, it is apparent that 1984 commercial markups and relative markups are higher in hospitals that were less dependent on commercial insurers in 1982. In terms of our main interests in this study, the commercial share is an important explanatory variable to be included in the model since it is strongly related to a hospital's waiver status. Whereas the PPS hospitals in this study have 25.9 percent of their days paid by commercial insurers, only 10.9 percent of the days at waiver facilities can be classified in this way. The low commercial share of days among waiver hospitals suggests that they would have had substantially higher markups were it not for the regulatory systems. Therefore, it appears that, by ignoring differences in the commercial share, the univariate analysis in Table 8 masks the true impact of the waivers on commercial payers' absolute and relative rates.

Summary

The analysis in this chapter was based on a sample of 140 short-term general private nonprofit hospitals. All facilities provided revenue, charge, and utilization data that passed a series of internal consistency checks. These checks reduced the potential sample of near 1,000 down to the 140 hospitals actually used, but left a set of facilities with data that one could be reasonably confident with. Despite observing only 31 hospitals in the four waiver States, statistically significant results were uncovered.

Cost shifting, measured as a change in commercial markups in response to the index of need to cost shift, did not seem to be taking place over the period 1982 to 1984. This was equally true in hospitals covered by PPS, TEFRA, and State waivers. Also, no evidence was found to suggest that PPS was creating financial hardships for hospitals. However, commercial insurers did benefit from all-payer controls built into the waiver systems when compared to hospitals covered by PPS. The multivariate regressions (Table 9) and their ability to control for various differences across facilities shows that the waivers produced significantly lower commercial markups than PPS in hospitals with otherwise equal need to cost shift and the commercial share of days were held constant. That is, the State ratesetting systems explicitly control charges to commercial insurers below where they would be in an unregulated State. Finally, these systems not only contain markups in an absolute sense for commercial payers, but also in a relative sense when compared to Blue Cross. All other things being equal, the waivers then should be improving the ability of commercial insurers to compete with Blue Cross plans in contrast to hospitals operating under PPS.

How do these findings relate to the impact of the State waivers on private health insurance premiums and tax expenditures? Since health insurance premiums are subsidized through the tax system, it follows that as premiums paid by individuals and corporations fall, tax deductible expenses fall resulting in reduced expenditures of taxes by government at the State and Federal level. Therefore, we can answer the above question if we can draw inference regarding the relation of PPS and the waivers to health insurance premiums. The data in this chapter show that commercial payers' rates in the waiver States are below those in otherwise comparable hospitals operating under PPS. If this holds true for Blue Cross plans as well (and data in Table 8 suggest it should), then private insurance premiums and, thus, tax expenditures should be lower in the waiver States than in the non waiver States. It is important to note that this conclusion is the result of lower private hospital rates under the waivers and not the result of an increase in private insurers' costs resulting from PPS.

V. PERCEPTIONS IN A RATESETTING ENVIRONMENT

This section reports the findings of a series of interviews that examined policies and attitudes among HMOs and commercial insurance companies toward all-payer systems. The interview method enabled us to examine issues for which data constraints would make a rigorous quantitative analysis difficult and, perhaps more importantly, to solicit the perceptions of people in the insurance and HMO industries regarding the effects of all-payer systems on competition. The major findings can be summarized as follows:

1. Granting a waiver that allows a State to regulate Medicare payments through a State system is not perceived to have any particular effect on HMOs and insurance companies above and beyond that which would be felt if the State regulated all payers other than Medicare.

2. Both insurance companies and HMOs are concerned less with their absolute hospital costs than their costs relative to other insurers.

3. The insurance industry originally spearheaded all-payer legislation but some insurance companies are backing off their support of all payers.

4. HMOs generally do not support hospital all-payer systems but those systems do not appear to affect their ability to compete.

5. All-payer systems may generate information that improves the ability of some insurers to comparison shop for hospital services.

6. All-payer systems permit equitable distribution of the costs associated with indigent care and bad debt.

Representatives from the insurance and HMO industries in Massachusetts, Connecticut, Maryland, and Pennsylvania were asked questions regarding all-payer systems. A list of the people who were interviewed appears as Appendix 2. These States were chosen for their proximity and because they differ primarily with respect to the type of hospital ratesetting they use, i.e., Massachusetts and Maryland use PPS waivers, Connecticut regulates all payers but Medicare, and Pennsylvania has no State rate-setting. Some of the questions differed for different respondents, depending on whether the respondent was from the insurance or HMO industry, which State(s) they operated in, etc. The following questions are samples of the types of questions asked in the interviews.

1. What are the insurance and HMO industries' positions toward all-payer systems?

2. What features of all-payer systems would be beneficial and which would not?

3. How would all-payer systems affect your organization's costs, sales (overall and market share), profitability, and benefits?

4. How would hospitals' costs be affected by all-payer systems?

5. What alternatives to all-payer systems would solve reimbursement problems?

Results of the study are presented around each of the major findings.

Results

A. Medicare waivers do not have any particular effect on HMOs and insurance companies. The primary issue is hospital rate regulation versus an open market system.

This response may be of the most interest regarding granting Medicare waivers to States. Both HMO and insurance representatives did not regard the Medicare waiver to be of particular significance in and of itself. Most insurance company respondants viewed payment options as a dichotomous choice--regulation or open market. The Medicare waiver is only a variation within all payers and all payers a variation within regulation. Those respondents who supported regulation generally favored the all payers approach and some of those who supported an open market thought that if payment were regulated some form of all payers would be preferred to a less comprehensive means of regulation, i.e., an all-or-nothing approach.

A respondant, operating in Washington, D.C., Virginia, and in "all-payer" Maryland, regarded a competitive system as the major alternative to regulation (i.e., all payers). He thought that a competitive system might shake out excess capacity resulting in lost jobs for hospital staff and possibly reduced access for

some populations if marginal hospitals went out of business. According to the respondant, he reasoned that a resulting smaller number of hospitals might cause prices to rise in the short run, whereas in the long run prices might decline as hospitals begin to compete with one another. He cautioned that an adequate number of good quality hospitals was necessary for a competitive system to operate effectively. In other words, some excess capacity is required in order for a competitive system to work.

B. **Insurance company and HMO respondants were concerned less with their absolute hospital costs than with their costs relative to other insurers.**

With one exception, the HMOs and insurers reported that all payer systems would probably reduce hospitals' costs and profits. The effect would be lower expenses for inpatient care for insurers as a group. But health care insurers are not concerned with their hospital costs as a group; their objective is to lower their hospital costs relative to other insurers.

The Mid-Atlantic Kaiser Health Plan said its hospital costs are lower in Maryland than in Virginia. They attributed this, at least in part, to Maryland's all payer system. However, Kaiser speculated that higher overall hospital costs (such as those in Virginia) might benefit HMOs. Its reasoning is based on the belief that in an open market system HMOs could always negotiate for a lower price than other payers.

The majority of the insurance representatives thought all payer systems would, at least in the short run, have a dampening effect on their costs, an increase in sales, and possibly contribute to improve profitability. It was speculated that increased market share would be captured from Blue Cross. One respondant was not certain that insurer's profits would increase, even though he thought costs would decrease and share would go up. Insurance companies might initially keep their prices and profit margins down, in order to increase their market share.

C. Some insurance companies are backing off their support of all payers.

According to an insurance company executive, from the mid to late 1970's insurance companies were generally supportive (although sometimes reluctantly) of regulation as a means of improving their competitive position against Blue Cross. Commercial insurance companies have been paying hospitals' charges while Blue Cross usually receives a discount, e.g., payment based on costs. He believes the industry has since become more divided in its position toward all payer systems. In the early 1980s, some of the larger insurance companies responded to their unfavorable competitive climate by developing and/or acquiring HMOs, PPOs, and modified indemnity plans that either require or encourage policyholders to use selected providers. The respondant sees the health insurance market eventually embracing the managed care concept, i.e., policies that employ utilization controls. He thinks these alternatives to traditional indemnity policies may be more competitive in a non-regulated environment. In an open market, where hospital rates differ for different payers, insurers who control or influence their policyholders' choice of providers could negotiate rates with hospitals rather than having to pay charges.

Insurance companies seem to be formulating their position toward all payer regulation based on the effect it would have on competing commercial insurers. Most commercial insurance companies probably still receive the bulk of their health insurance business from traditional indemnity policies. However, the companies that are putting more stock in the future of alternative delivery plans would be hurt less by an open market system than companies that are only beginning to invest in the alternatives. The "futuristic" companies may be willing to sacrifice the growth of their old "bread and butter" indemnity health insurance business for the sake of establishing an early, dominant share of the new expanding alternative health insurance market.

Commercial insurance companies that are investing in alternative health financing systems (HMOs, PPOs, and indemnity policies with managed care components) may be encountering difficulty redefining their position toward all-payer systems in mid-stream. One insurance representative said his company is meeting itself coming and going; indemnity policies are a large source of revenues, and the company ranks still include indemnity devotees. While some companies have endorsed competitive systems as a clear corporate strategy, others, while investing in alternative insurance products, are publicly still backing all-payer systems. Thus, the best strategy to take toward all payers is not agreed upon, even among companies that outwardly appear similar in their approach to the future of the health insurance industry.

Each of the insurance company respondants, regardless of their position toward all-payer systems, would like to eliminate the Blue Cross discount and most think all-payers would be a viable mechanism for doing so. Most thought that Blue

Cross would not be a formidable competitor if its differential were eliminated but indications are mixed on this point. One respondant from Blue Cross in New York indicated that it has seen its share of the hospital market drop from approximately 85 percent to little more than 70 percent. This has been attributed, at least in part, to its reduced differential under New York's all payer system. However, in Maryland, an insurance representative estimated that Blue Cross' market share may have dropped only slightly even though its discount dropped 15 percent to 5 percent. Throughout the country, Blue Cross plans are expanding their product lines to include a variety of HMOs and PPOs. In Massachusetts, where the all-payer system reduced the Blue Cross discount from 13.5 percent to 7.5 percent, Blue Cross' total market share may have increased slightly because of a large increase of members joining Blue Cross' HMOs. At this point it is too early to predict the effect all-payers systems and the subsequent elimination or reduction of the Blue Cross discount, would have on market shares.

D. HMOs generally do not support hospital all payer systems (or Medicare PPS waivers) but seem to be competing successfully in States with these systems.

HMO respondants were generally more unified in favor of a competitive approach against all-payer systems than the insurance industry respondants. HMO respondants generally objected to all-payer systems unless HMOs were free to negotiate their hospital rates independent of regulation.

According to some HMO representatives, an all payer system will not necessarily constrict hospitals' revenues to the point of eliminating room for HMOs to negotiate favorable rates with hospitals. Most HMOs in Connecticut currently contract hospital services through Blue Cross, thus receiving the Blue Cross discount. However, a representative from Connecticut's HMO association said that HMOs are anticipating the eventual elimination of the Blue Cross discount and are starting to negotiate their rates directly with hospitals. Blue Cross may remain as an intermediary, but HMOs' rates will reflect what the market will bear rather than the legislated Blue Cross discount. The State HMO association speculated that most HMOs will probably be able to at least equal the present Blue Cross discount in direct negotiations with hospitals.

It is possible that conditions fostering the growth of HMOs and other alternative delivery plans may not be significantly affected by variations in hospital payment. The data in Table 10 indicate that HMO enrollments are growing faster in the all payer States than in the rest of the country suggesting that all payer systems are not an impediment to HMO development. Enrollments grow faster despite the fact that the growth in the actual number of HMOs is somewhat less in the four study States than it is nationally. Massachusetts Blue Cross' HMOs grew considerably under the period of all payers but they did not attribute this growth to the payment system, saying that the market was simply ripe for growth of HMO business, i.e., HMO growth is independent of the hospital payment climate, however, evidence does not totally support this view.

Table 10
Growth of HMOs and HMO Enrollment
1981-1985

	1981 June	1983 June	1985 Dec.	Percent Change 1981-1983	Percent Change 1981-1985
CONNECTICUT					
# of HMOs	7	7	8	00.0%	14.3%
# of Members*	91	118	251	29.7%	175.8%
MARYLAND					
# of HMOs	7	8	11	14.3%	57.1%
# of Members*	70	81	299	15.7%	327.1%
MASSACHUSETTS					
# of HMOs	14	17	19	21.4%	35.7%
# of Members*	229	453	879	97.8%	283.8%
PENNSYLVANIA					
# of HMOs	10	11	15	10.0%	50.0%
# of Members*	184	294	699	59.8%	279.9%
UNITED STATES					
# of HMOs	243	280	480	15.2%	97.5%
# of Members*	10,266	12,491	21,052	21.7%	105.1%

Source: InterStudy, October 1986

* Numbers of members in thousands.

Although all-payer systems did not dissuade U.S. Health Care from deciding to enter the Maryland market which probably has the most highly regulated reimbursement system in the country, conclusive results of HMO integration into the other all-payer systems is less clear. The fact is that U.S. Health Care entered the New Jersey market less than 2 years ago and grew and became the largest HMO in the State. Massachusetts and Connecticut also make specific provisions to, in essence, exclude HMOs from regulations, presumably to encourage the growth of HMOs. Accordingly, it becomes difficult to conclude what effect all payers would have on HMO growth.

E. All-payer systems may generate information that improves the ability of some insurers to comparison shop for hospital services.

Most commercial respondants thought that all payer systems would create information that identifies high and low cost hospitals. In effect, the regulatory process requires hospitals to produce information that helps create a more favorable environment for comparison shopping than exists under a so called "competitive" or open market system. This improved environment is only helpful to those insurers that can direct or encourage their policyholders, through PPOs and managed care policies, to utilize specific providers. In Pennsylvania, the antiregulatory climate forced the insurance industry to abandon support of an all payer system but spurred it to push for PPO enabling legislation and legislation that requires hospitals to report cost and quality of care information (which might otherwise be generated as a result of an all payer system). Insurance representatives in Pennsylvania said that in order for a competitive system to operate effectively, hospitals must make more and better data public to enable customers, including insurers, to identify the lower cost hospitals.

All-payer systems may make a ratesetting process more equitable in terms of allowing all classes of payers, particularly the relatively minor players, better access and participation in the ratesetting processes. A Maryland insurance representative said that its all-payer system allows the public, including all health insurers, access to the rate-setting process--a process that had previously excluded input and influence from the public and possibly more relevantly, the insurance industry.

F. All-payer systems could be used to equitably distribute the cost of indigent care/bad debt.

Insurance respondants considered all-payer systems an equitable means for distributing nonallowable costs such as graduate education and indigent care. According to these insurers, in an open market system the commercial insurers foot the bulk of the bill for hospitals' bad debt and other nonallowable costs. HMOs, on the other hand, avoid paying for nonallowable costs in an open market system. Some HMOs did not object to paying their "fair share" although they mentioned that their customers did not regard indigent care their responsibility.

Appendix A

DESCRIPTION OF STATE RATESETTING SYSTEMS

Maryland

In Maryland, the Health Services Cost Review Commission operates two different ratesetting systems concurrently. All of the State's 52 hospitals are reimbursed using the Inflation Adjustment System or IAS. The IAS program computes an annual percentage increase to adjust existing hospital-specific revenues. These rates were initially set for each department or patient service center by dividing total approved costs for each center by the projected units of service. For example, these hospitals receive a prospective per diem rate for the intensive care unit, or a flat prospective rate per CAT scan, or operating room (OR) charges based on minutes of OR use. These hospitals are required to charge Commission approved rates on average. However, they are permitted to establish charge structures which differentially price separate services within a revenue center so long as the approved rate is charged on average.

Hospitals are reimbursed under one of three subcomponent systems. A Guaranteed Inpatient Revenue Program or GIR is the basis of payment for 45 Maryland hospitals. The GIR system pays a prospective case rate per discharge. Unlike the Medicare and New Jersey case mix systems, the Maryland GIR establishes a per case limit based solely on a hospital's own experience in a selected base year, rather than blending it with Statewide or national per case costs.

Under the GIR system, each hospital's base year data on live discharges are classified by payer and diagnosis. There are a number of different diagnostic grouping systems applied to different hospitals. However, most hospitals use either the 467 DRG grouping system or a method based on the four-digit ICD-9 Principal Dignosis Code. For each diagnostic category, the hospital's average charge per case in the base year is calculated. This amount is then inflated to the rate period by the same inflation factor developed under the IAS, and a 1 percent intensity factor for growth and technology is added. It should be kept in mind that, under the GIR, individual patients are still charged for the actual services they use, while under the Medicare and New Jersey systems the opposite is true: individual patients are charged the average per case amount.

The second subcomponent system is the Total Patient Revenue system. This is a capitated amount that the hospital is paid for providing medical services to a defined area. There are currently five hospitals being reimbursed under this system. The third subcomponent system is Departmental Rates. The two hospitals currently using this system are paid a budgeted revenue amount based on total inpatient and outpatient revenues. This system is not based on case mix changes.

In Maryland, there are seven hospital peer groups. These groupings are based on the following variables: location, extreme size variations, extreme payer mix differences, case mix intensity, and scope of services. These fixed peer groupings were created in 1983 and have only been used when formal

interhospital cost comparisons are necessary for a full rate review. This contingency arises infrequently.

Hospitals in Maryland face two different types of upper limits on reimbursement depending on whether they are a GIR hospital or a non-GIR hospital. Non-GIR hospitals have their base year rates adjusted for inflation by use of the Commission's factor price index and are required to charge the adjusted rates on average. Variances between approved and actual prices charged by revenue center are calculated. Positive price variances above approved rates, but within specific corridors (i.e., ranging from 1-5 percent by type of revenue center), are recovered in the following year's rates at the actual amount of variance plus an appropriate interest factor. Positive variances in excess of the specific corridors are recovered at the actual amount, plus appropriate interest, plus a 40 percent penalty on the amount in excess of the corridor.

For the great majority of Maryland hospitals which are paid according to some version of the GIR plan, payment ceilings are as follows. If a facility's actual revenue is greater than the approved revenue (without a change in volume) for that diagnostic group, the Commission will recoup the difference in the following year.

Massachusetts

The reimbursement system administered by Massachusetts sets a prospective spending level (known as the "maximum allowable cost" or MAC) on each hospital's total inpatient care revenues. Each third party payer contributes to

the facility's allowable revenue based on its share of patient charges. Hospitals set their charges for specific services in order to ensure that they do not exceed approved revenues.

Massachusetts does not employ a hospital classification system. Each hospital is compared to its own historical cost experience in determining a prospective budget.

Under the Massachusetts MAC program, maximum reimbursement is essentially determined by the following steps:

- Base year actual costs--adjusted for volume and certain approvable exceptions--are adjusted for inflation;
- Actual uninflated costs or pass-throughs are added on;
- A "productivity factor" reduces this amount by a specific percentage, i.e., 2 percent per year;
- This adjusted amount is multiplied by each payer's portion of charges.

Medicaid receives a large discount, designed to incorporate into the payment system the historic differences between Medicaid payments and those of other payers. The historic discount reflects Medicaid's 1982 actual lower rates of hospital payments compared to what Medicaid theoretically would have paid in 1982 had payments been based on the Blue Cross premiums in effect. These payments are due to the ceilings, penalties, and definitions of allowable costs used in the previous methodology.

New Jersey

The State of New Jersey reimburses its hospitals at a prospectively determined case rate per discharge and uses the DRG method. The New Jersey DRG prices are also adjusted for outlier payments and increased by indirect costs. And, as in the Medicare PPS, each hospital is expected to charge the same price per DRG for all patients.

However, the application of the DRG payment system in New Jersey is decidedly different from the Medicare program. Two major differences are: (1) the method of allocating costs to DRGs; and (2) the degree to which DRG rates reflect individual hospital as opposed to group cost experience.

Under Medicare, the operating cost per discharge is the key variable determining the level of payment. Operating costs are allocated to specific DRGs in the following manner: for routine and special care costs, the allocation method used is the cost per day; ancillary service costs are apportioned according to the ratio of charges to costs (RCC).* All remaining inpatient hospital costs are reimbursed on the basis of reasonable costs and are not distributed by DRG. These include costs associated with capital expenses, medical education, and recognizable bad debts.

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* Beginning 10-1-85, Medicare allocates all operating costs by simple charges.

In New Jersey the key cost category is the "direct patient care cost per DRG." Direct patient care costs include nursing, other routine services, and ancillary services. Routine and special care costs are assigned to a DRG on the basis of cost per day. However, ancillary costs are apportioned to DRGs on the basis of the ratio of charges to charges applied to costs.

Unlike Medicare, New Jersey does not simply fold much of the indirect costs into the DRG rate. Rather, a separate cost screen set at 110 percent of the median ratio of indirect to direct costs is applied to such operating costs as managerial, educational, and facilities maintenance services. Only the indirect costs that pass the screening process become the reasonable indirect costs and are added to the DRG-specific amount through a mark-up factor. If, for example, direct patient care represented one-half of reimbursable costs, the payment rates would be doubled to recover the approved indirect costs.

Turning to the second point, DRG rates under Medicare are much more a product of group standards as opposed to each hospital's unique operating characteristics as in New Jersey. In New Jersey, the State Department of Health applies a formula to calculate its average per case amount for each DRG. It computes the straight average direct patient care cost per DRG for each hospital; it then derives the same figure for each of three statewide hospital peer groups. These two average case rates are next blended to derive a base payment rate for the DRG comprised of a division between hospital-specific and group-specific costs which varies by DRG depending upon the coefficient of variation for each DRG.

Hospitals in New Jersey are classified into one of three peer groups for rate-setting purposes: teaching facilities, minor teaching facilities, and nonteaching facilities. The appropriate group standard is used in calculating both direct and indirect patient care costs.

Overall reimbursement ceilings in New Jersey are derived in the following manner:

- Adjusted direct patient care and indirect costs in the base period are combined with uninflated financial elements such as uncompensated care and working capital needs;
- This amount is multiplied by projected volume to yield an estimated revenue budget;
- A hospital uses this budget to structure its charges so that revenue collected at the end of the rate year equals the target budget;
- Any overcollection or undercollection plus interest will be dealt with in the following year's rates.

New York

The New York prospective hospital reimbursement system places an annual cap on each facility's total inpatient care revenues. Each payer's share reflects the utilization of services for its beneficiaries based on the RCC. Routine and ancillary services are reimbursed through a single all-inclusive per diem rate adjusted for the RCC.

The grouping methodology used in New York is known as "seed clustering." Under this methodology, instead of having a few fixed peer groups, each hospital is at the center of its own group with other hospitals gathered around it which are most similar as measured by the closeness of the variables determined through regression analysis to be the most significant in predicting cost. Some of the variables considerd in grouping are case mix, service mix, patient mix, bed size, teaching activity, and geographic location.

Within this system, hospitals are first partitioned into four subpopulations: Upstate New York, Downstate New York, teaching facilities, and nonteaching facilities. Within each of these areas hospitals are seed clustered, producing as many different peer groups as there are hospitals.

In New York, individual hospital revenue caps and ceilings are essentially calculated as follows:

- A hospital's ancillary costs per discharge (adjusted for case mix) are subject to a ceiling of 105 percent of peer group average costs;
- Routine costs are subject to a combined routine/length of stay ceiling set at 107.5 percent of peer group average costs, using expected days;
- Approved base year operating costs are inflated to rate year by a trend factor;
- Other financial elements are added on, e.g., bad debt and charity care;
- All private hospitals receive a discretionary allowance of 2 percent of hospital costs; a 3 percent allowance is now used for public general hospitals;

- A hospital's average charge per diem is limited to no more than a fixed percentage above its Blue Cross rate, i.e., 12 percent.

Adjustments for Inflation

All four of the prospective payment systems under examination employ a composite index of economic indicators to adjust a hospital's allowable base costs for projected inflation through the rate year. Under Medicare PPS, the estimated inflation update factor is final; there is no retroactive settlement if actual inflation differs from the projected level. The four all-payer States, however, will adjust the index retroactively based on actual cost data.

Medicare DRG rates per discharge are updated through application of the HCFA Market Basket for Hospital Inpatient Operating Costs as produced by Data Resources, Inc. This index compiles a list of the market basket of goods and services which a typical hospital must purchase during its normal operations and weight each of these cost categories by its relative importance in contributing to a hospital's expenses. Next, each cost factor is projected forward in time based upon a series of national price indicators or proxies which are generally external to the hospital industry, such as the Consumer Price Index (CPI) or the Producer Price Index (PPI) of the Bureau of Labor Statistics (BLS). The sum of each of these weighted average price forecasts is the composite inflation rate.

The Maryland Commission uses its own input price index to derive a series of hospital-specific inflation factors as opposed to a single rate. Under its

program, each hospital's individual mix of inputs is used to develop the weights. The price indicators applied are taken largely from BLS data such as the PPI and are mostly exogenous to the hospital industry.

Since October 1983, Massachusetts has applied essentially the same Data Resources, Inc. (DRI) National Market Basket as Medicare uses to establish price proxies and forecasts. However, its program uses Massachusetts hospital-specific weights to measure the relative value of inputs. Accordingly, there is a separate inflation adjustment figure allowed for each hospital.

New Jersey also adopted the DRI National Hospital Market Basket in 1983. Unlike Medicare, it utilizes some hospital-specific price proxies. What is the same are the relative weights assigned to hospital inputs of goods and services. New Jersey uses this modified index to compute separate inflation factors for each participating hospital.

Finally, in New York a very comprehensive composite price index is used to develop a projected inflation figure. In fact, there is a total of 13 possible inflation factors based on 13 different statewide groups derived from the following variables: geographic location, teaching status, population and ownership. The weights used are separately calculated for each hospital group. Allowable costs are trended forward to the rate year, generally using external price indicators such as the CPI, PPI, and BLS wage increase data.

Adjustments for Volume Changes and Occupancy Levels

Prospective payment rates per discharge set under the Medicare PPS program are not adjusted for changes in a hospital's patient volume or occupancy levels during the rate year. However, all of the all-payer State systems include a target volume level and only reimburse for a portion of expenses over the predicted volume. One State also imposes minimum occupancy requirements and penalties.

Hospitals reimbursed according to the Maryland IAS system are eligible for a volume adjustment which pays only the variable cost associated with volume increases in individual revenue centers, or the fixed cost associated with volume decreases. The percentage of fixed versus variable costs is assumed to be a 50/50 ratio. Under the GIR system, if actual admissions are less than the projected amount, the hospital is given its fixed costs associated with the difference in the following year's rates. If actual revenues are greater than the GIR because of increased volume, the hospital may keep only 50 percent to cover its variable costs.

The MAC program in Massachusetts also contains a volume adjustment mechanism which is based on trends in discharges. It was instituted in some hospitals in FY 1985 on an optional basis; all hospitals were required to use it beginning in FY 1986. Under this mechanism, for increases in discharges, a facility is allowed a variable cost adjustment of 50 percent of full cost per discharge. For decreases in discharges that remain within a certain range or corridor (4 percent in FY 1985), no adjustment is made. For decreases which

exceed the downside corridor, a cost adjustment of 50 percent is applied.

The New Jersey DRG system is partially volume variable. A combined volume/intensity adjustment is included for volume changes, up or down, that are less than 10 percent between base and rate years. In these cases, a hospital would receive its full variable costs plus an increasing percentage of the fixed portion, if volume is increasing; and it would be reimbursed a decreasing fraction of the fixed portion if there has been a volume turndown. For changes equal to or greater than 10 percent, if volume is increasing, a hospital may keep all of the marginal revenue it gains; if volume is decreasing, it may not recover any of the revenue it loses.

In the New York revenue cap system, the target volume is the total number of inpatient days in the base year. If actual days are greater than the target, a hospital is paid a predetermined percentage of its rate for each excess day to cover variable costs. Hospitals with decreases in patient days are reimbursed the appropriate fixed percentage of operating costs only. The actual ratio of fixed/variable costs fluctuates according to the type and degree of the volume change, i.e., changes in discharges versus changes in length of stay.

Additionally, New York has long applied minimum occupancy standards to its prospective rates. Once base year operating costs are determined, per diem rates are calculated by dividing by imputed patient days based on minimum utilization. The current standards are applied by service center and allow a

corridor of five beds or 1 percent of certified beds, whichever is greater:

	Urban	Rural
Medical/surgical beds	85%	80%
Pediatric beds	70%	70%
Maternity beds	75% or 1,500 live births	60% or 500 live births

Adjustments for Uncompensated Care

There are a variety of provisions to reimburse for all or a portion of uncompensated care costs (defined as uncollectable accounts ascribed to bad debts and charity care) in the all-payer States.

Unlike the State systems, the Medicare PPS program does not cover the costs of any charity care; and only pays for bad debts attributable to deductible and coinsurance amounts related to covered services received by its beneficiaries. However, as a condition of the waiver awarded to Maryland, Massachusetts, New Jersey, and New York, the Medicare program will pay for a limited portion of uncompensated care in these States only.

Beginning with Maryland, the Commission there has developed a "reasonableness test" for uncompensated care which uses regression analysis to project reasonable payment levels. Each payer, including Medicare, contributes its prorated share based on its percentage of gross patient revenue. Hospitals in excess of the predicted amount are permitted to supply justification for why they should be allowed a greater amount.

Under the Massachusetts system, third-party payers contribute to uncompensated care costs in varying degrees. For example, Medicare and Medicaid do not recognize their proportionate share of total bad debts as an allowable cost; Medicare pays only the recognizable bad debts associated with its beneficiaries, and Medicaid does not reimburse for bad debts at all. Conversely, Blue Cross and charge-based payers reimburse for their share of total bad debts.

As far as charity care is concerned, Medicaid will pay its share only if 68 percent or more of a facility's revenues goes to public beneficiaries. Medicare reimburses its share of hospitals' charity care, but only up to a statewide limit of 1.4 percent of Blue Cross total allowable costs. For their part, Blue Cross and the commercial insurers guarantee full coverage of charity care for most facilities, subject to the overall limit that private sector revenues may not exceed 125 percent of a hospital's private patient care costs.

The New Jersey system is relatively straightforward. All hospitals in the State receive full payment for uncompensated care. The cost is apportioned among the payers, including Medicare, according to their percentage of total patient revenues.

Finally, New York developed a complex system for covering the cost of uncompensated care. To begin, each third-party payer adds a factor to its prospective rate to create regional pools of funds earmarked for bad debt and charity care. Separate pools are established for public and private hospitals and funds are distributed for the most part based on need. Major public providers receive funds on the basis of each facility's percentage of statewide general

inpatient costs. The percentage add-ons for the pools vary by region and were determined such that resources available for the pools were set at an average of 3 percent of statewide hospital operating costs between 1982 and 1985. The annual distribution of this amount was set at 2 percent of total statewide hospital operating costs in 1983, 3 percent of such costs in 1984, and 4 percent of such costs in 1985.

In addition, there are further add-ons of lesser amounts to establish pools for facilities demonstrating severe financial hardship for purposes of offsetting losses from bad debt and charity care. Medicare's share of uncompensated care costs, in general, is limited to its ratio of inpatient charges to total inpatient/outpatient charges.

The Role of Case Mix

The reimbursement systems take changes in a hospital's case mix into account either through continual recognition of specific illnesses or through ex-post adjustments. Three of the reimbursement programs under discussion pay a prospective case rate per discharge as the means of recognizing these illnesses: Medicare PPS, New Jersey, and Maryland-GIR hospitals. Each of these programs use the case mix experience of hospitals to determine per case reimbursement amounts. Of course, the precise degree to which a hospital's own case mix defines the limits varies. In Maryland, the individual hospital's case mix is taken into account 100 percent; while in New Jersey, hospital-specific case mix factors are blended with statewide or national per case costs.

One additional development has occurred in New Jersey. Beginning in 1983, a special adjustment was incorporated into the prospective rates in recognition of the fact that shifts in volume and/or case mix intensity are not necessarily accompanied by a corresponding shift in costs. In other words, direct patient care costs need not be 100 percent volume variable, and some economies of scale should be possible within these revenue centers. The new composite volume/intensity adjustment calculates the variable and fixed costs associated with treating more patients or a more acute case mix. It treats compensation costs as fixed, but all other direct patient care costs as variable.

Turning to Massachusetts, an ex-post case mix adjustment to the MAC calculation has been allowed for all payers since the inception of the MAC program in October 1982. However, poor data have generally precluded such an adjustment in the past. Blue Cross of Massachusetts developed a new, combined adjustment for case mix/volume changes which employs Massachusetts-specific DRG weights. This system replaced original volume arrangements with participating hospitals as of October 1984. In simplified terms, it allows each hospital to use a projected case mix adjustment of 1 percent of each year above the base year to be a part of the volume adjustment formula, subject to the 50 percent marginal allowance. The Medicare and Medicaid programs also participate in this system, as well as the charge-based payers; however, Medicare and Medicaid follow some but not all of the features.

Effective with the 1986 rate year, New York would have introduced its own ex-post automatic case mix adjustment to the prospective rate to recognize differences in case mix between the hospital and the group it is compared to for

ceiling coding purposes. It would have been based on Medicare's 467 DRG grouping system and would probably include New York-specific intensity weights.

Adjustments for Teaching Activity

Maryland does not employ a formal adjustment for teaching activity per se, but to a limited extent teaching status is used in making interhospital comparisons. For instance, the Commission's Interhospital Cost Comparison Methodology, which groups hospitals for full rate review purpose and its IAS program do evaluate teaching hospitals' rates in light of costs at other teaching facilities, among other variables.

The MAC program in Massachustts does not utilize any adjustments, formal or informal, for costs related to teaching activity. Medical education is simply recognized as part of allowable costs, and each hospital's prospective revenue cap is calculated separately based on its particular cost experience overall.

The New Jersey case mix system grants major recognition to teaching activity by classifying its peer groups entirely on teaching status. For the purposes of calculating group average direct costs per DRG and screening indirect costs, all hospitals are stratified into three peer groups: teaching, minor teaching, and nonteaching.

Finally, the special costs associated with teaching activity are indirectly accounted for in New York by its hospital classification system. Hospitals are first divided into four subpopulations based on teaching status and geographic

location. Next, within each of these areas, a hospital is seed clustered to produce its own individual peer group. One of the key variables considered in this grouping process is teaching activity.

APPENDIX B

NAMES AND ORGANIZATIONS OF RESPONDENTS

Jim Bilodeau, U.S. Health Care (PA)

Ruth Lighter, U.S. Health Care (PA)

Milt Williams, U.S. Health Care (PA)

Heidi Morrison, Blue Cross of New York

Don Ingalls, Community Health Care Plan and Connecticut Assoc. of HMOs

Hal Beladoff, Blue Cross of Massachusetts

Mike Shiffer, CIGNA Insurance Co.

Alan Silverstone, Kaiser Foundation Health Plan of Mid-Atlantic States, Inc.

Gary Summers, Kaiser Foundation Health Plan of Mid-Atlantic States, Inc.

Phil Hertick, Health America (PA)

Andrea Scharf, Pennsylvania Association of HMOs

Allen Raymond, Harvard Community Health Plan

Paula Griswold, Massachusetts Business Roundtable

Tom O'Hare, Health Insurance Association of America

Jeff Rouch, Insurance Federation of Pennsylvania, Inc.

Henry Diprede, John Hancock Insurance Co.

Jon Gable, Health Insurance Association of America

Burgess Walker, Massachusetts Executive Office of Human Services

Craig LeRoy, Connecticut Insurance Association

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